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Who benefits from more housing?

A panel data study on the role of housing in the intermunicipal migration of different age cohorts in Sweden

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Förord/Preface

Rapporten är författad av nationalekonom Peter Karpestam, fil.dr. och analytiker vid Boverkets analysavdelning. Rapporten är skriven på engelska men inleds med en svensk sammanfattning. En tidigare version av rapporten presenterades på ”European Network for Housing Research”, Lissabon, 28 juni-1 juli, 2015 (www.enhr2015.com). Författaren vill tacka seminariedeltagarna samt Marie Rosberg och Bo Söderberg för värdefulla synpunkter och bidrag.

This report is written by economist Peter Karpestam, Ph.d. The report is in English and contains a Swedish summary. An earlier draft was presented and discussed during a workshop at the “European Network for Housing Research”, Lisbon, June 28-July 1, 2015 (www.enhr2015.com). The author would like to express his gratitude to workshop participants in Lisbon, Marie Rosberg and Bo Söderberg for valuable contributions and suggestions.

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Bo Söderberg
Avdelningschef

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Inledning

För mer detaljer än vad som framkommer i denna sammanfattning hänvisar vi till huvudrapporten. Vid några tillfällen refererar vi till tabeller och figurer som finns i huvudrapporten.

Syfte

Rapporten tar avstamp i de senaste årens bostadspolitiska debatt där det ofta uttryckts att den tilltagande bostadsbristen främst drabbar de som redan står långt ifrån bostadsmarknaden. Exempelvis ökade andelen unga som bor kvar hos sina föräldrar mellan 1997 och 2015 och genomsnittsåldern för att flytta hemifrån ökade med ca 0,5 år mellan 2000 och 2013. Vidare har antalet kommuner som uppger att de har bostadsbrist ökat, i synnerhet de som uppger att de har brist på hyresrätter. Vi vet också att unga vuxna och låginkomsttagare är överrepresenterade i hyresrättsbeståndet, samtidigt som ett stort antal lägenheter har ombildats från hyresrätter till bostadsrätter och nyproduktionen av hyresrätter minskade kraftigt i början på 1990-talet.

Rapportens syfte är att analysera hur olika ålderskohorters benägenhet att flytta över kommungränserna påverkas av bostadsbeståndet storlek och upplåtelseformernas fördelning (andelen hyresrätter av det totala bostadsbeståndet). Vi analyserar hur antalet bostäder per capita och andelen hyresrätter, dels i det befintliga beståndet, dels i nyproduktionen påverkar förekomsten av flyttningar mellan kommuner. Att dela upp befolkningen i olika ålderskohorter är av intresse, dels för att ålder har ett samband med förmågan att konkurrera om befintliga bostäder, dels för att boendepreferenser kan ändras över livscykeln. Dessutom varierar flyttfrekvensen stort mellan olika ålderskohorter då de unga vuxna är betydligt mer flyttbenägna än äldre vuxna (se figur 7, sid 24).

Metod, data och förväntade resultat

Datamaterialet kommer huvudsakligen från Statistiska Centralbyrån (SCB). Data över antal flyttningar mellan kommuner är uppdelat på ålderskohorter samt ankomstkommuner (dit man flyttar) och ursprungskommuner (kommunerna som de flyttande lämnar) och har specialbeställts. Datamaterialet utgör årliga data från landets kommuner perioden 1993-2012. Vi använder paneldataregressioner för att skatta de empiriska

sambanden. Modellen är en ”modifierad gravitationsmodell” vilket innebär att individers rörlighet över kommungränser modelleras som en funktion av egenskaper hos ankomstkommunerna och ursprungskommunerna. Det innebär att ankomstkommunernas inflyttning och ursprungskommunernas utflyttning modelleras i en och samma ekvation.

Vår frågeställning är hur den befintliga bostadsstockens storlek per capita, nybyggnationen per capita och andelen hyresrätter påverkar rörligheten över kommungränser för olika ålderskohorter. Vi fokuserar på individer i arbetsför ålder och analyserar kohorterna 20-24, 25-34, 35-44, 45-5, 55-64 samt 65-74 år. Vi exkluderar kohorterna 0-19 samt 75+ eftersom barn och ungdomar oftast inte flyttar själva samtidigt som flyttfrekvensen över kommungränserna är mycket låg för de över 74 år. Vi skiljer mellan storleken på det befintliga beståndet och nybyggnationen, eftersom en nybyggd bostad alltid ger upphov till minst en vakans, medan det krävs specifika händelser (exempelvis dödsfall, par som flyttar ihop eller emigration till utlandet) för att det ska uppstå nya vakanser i det befintliga beståndet. En ökning av det befintliga beståndet ska i modellen förstås som det hypotetiska scenariot att kommunerna har ökat sitt bostadsbestånd per capita åren innan flyttningarna äger rum, d.v.s. att de byggde mer eller att befolkningen ökade mindre än vad som faktiskt inträffade. Nybyggnation avser istället antalet färdigställda bostäder samma år som flyttningarna sker.

Då det totala antalet bostäder bör ha en positiv korrelation med antalet lediga bostäder utgår vi från hypotesen att kommuner som ökar antalet bostäder per capita (antingen av det befintliga beståndet eller av nybyggnationen) också får en ökad inflyttning. På motsvarande sätt tror vi att kommuner kan minska sin utflyttning genom att öka sitt bostadsbestånd, detta eftersom kommunernas invånare i ökad utsträckning kan tillfredsställa sitt behov/efterfrågan genom att flytta till en annan bostad i den egna hemkommunen. Det kan emellertid även finnas andra indirekta mekanismer som ger motsatt effekt, vilket kan illustreras med ett exempel. Anta att bostadbeståndet ökar i kommun A och att detta genererar en ökad inflyttning från kommun B. Utflyttningen från kommun B frigör bostäder där, vilket innebär att det även blir lättare att flytta från kommun A till kommun B. Om sådana flyttkedjor hinner bli tillräckligt långa inom loppet av ett år (vi använder ju årsdata) kan resultaten istället komma att indikera att kommuner som ökar sin egen bostadsstock inte bara får en ökad inflyttning, utan också en ökad utflyttning. Resultaten kan förhoppningsvis ge en indikation om vilka av de nämnda effekterna som dominerar men om vi inte erhåller signifikanta samband behöver det inte nödvändigtvis innebär att bostadsstockens storlek inte påverkar rörligheten.

Det skulle också kunna innebära att de mekanismer som nämndes ovan tar ut varandra.

Utöver att det är intressant att analysera hur faktorer på bostadsmarknaden påverkar rörligheten generellt så skiljer vi, som nämndes ovan, även mellan olika ålderskohorter. Vi frågar oss bl.a. om den minskande andelen hyresrätter sedan 1990-talet (framför allt i storstadsregionerna) har hämmat rörligheten för unga vuxna mer än övriga ålderskohorter (eftersom unga vuxna är överrepresenterade i hyresrättsbeståndet) och om nybyggnation gynnar rörligheten för relativt köpstarka ålderskohorter mer än för andra, detta eftersom nyproduktion anses relativt dyrt. Det sistnämnda kan förefalla rimligt men om nyproduktionen ger upphov till flyttkedjor som även frigör ”billiga” bostäder i samma kommun som nyproduktionen sker så är inte detta ett givet resultat.

Regionala skillnader

Sverige har 290 kommuner och förutsättningarna ser olika ut. För att åskådliggöra detta delar vi in landets kommuner i sju olika kommuntyper:

1. Storstockholm,
2. Storgöteborg
3. Stormalmö
4. högskolekommuner med mer än 75 000 invånare
5. högskolekommuner med färre än 75 000 invånare
6. övriga kommuner med fler än 25 000 invånare
7. övriga kommuner med färre än 25 000 invånare.

Figur 4 (sid 20) visar hur de olika kommuntyperna är fördelade geografiskt i Sverige och som man kan se så angränsar samtliga kommuner till i storstadsregionerna till varandra, vilket inte är fallet för de övriga kommuntyperna. Figur 5 (sid 21) och 6 (sid 23) visar hur antalet bostäder per capita och andelen hyresrätter har utvecklats sedan 1990. För att ta hänsyn till att boendeytan skiljer sig mellan de olika upplåtelseformerna har vi omvandlat antalet totala bostäder till antal ”ägarrättsekvivalenter”. Vi har således uppskattat hur många äganderätter som den totala boendeytan i bostadsbeståndet motsvarar. Figur 5 och 6 visar på betydande regionala skillnader. I storstadregionerna minskade antalet bostäder per capita mellan 1990 och 2012, medan de ökade för kategorierna 5-7 (figur 5, sid 21). I högskolekommuner med fler än 75 000 invånare var antalet bostäder per capita i stort sett konstant under perioden. Andelen hyresrätter minskade i storstadsregionerna men var i det närmaste oförändrad för övriga regioner (figur 6, sid 23). Med anledning av dessa regionala skillnader kan vi för-

vänta oss att resultaten kommer att visa att utvecklingen sedan 90-talets början har påverkat rörligheten för olika ålderskohorter i olika riktning och i varierande hög grad i olika kommuntyper.

Figur 7 (sid 24) visar hur rörligheten över kommungränser utvecklats för de olika ålderskohorterna sedan 1990. Det är endast för unga vuxna mellan 20 och 24 år som rörligheten över kommungränserna har minskat på senare år. För de övriga ålderskohorterna ligger rörligheten över kommungränserna på en relativt konstant nivå, om något har rörligheten ökat svagt. Analysen i denna rapport möjliggör en uppskattning av i vilken utsträckning den minskade rörligheten för de unga vuxna beror på ett urval av faktorer på bostadsmarknaden. För de övriga ålderskohorterna blir istället frågeställningen om rörligheten kunde varit ännu högre om utvecklingen på bostadsmarknaden hade sett annorlunda ut.

Tabell 2 (sid 25) visar hur flyttmönstren skiljer sig mellan de olika ålderskohorterna för de olika kommuntyperna. I tabell 2 kan man se att den positiva nettoinflyttningen till storstadsregionerna (Storstockholm, Storgöteborg, Stormalmö) och högskolekommuner med fler än 75 000 invånare till stor del drivs av inflyttning av unga vuxna mellan 20 och 24 år. För Storstockholm och Storgöteborg har man även positiv nettoinflyttning av individer mellan 25 och 34 år. För övriga kommuntyper ser vi ett i det närmaste omvänt mönster. Effekten är att kommuner utanför storstadsregionerna och de stora högskolekommunerna minskar sin befolkning av unga vuxna men ökar sin befolkning av de äldre. Notera att tabell 2 inte visar den totala befolkningsökningen och därmed inte inkluderar barnafödslar, dödsfall samt in- och utvandring från/till utlandet utan enbart avser den effekt som uppstår genom inrikes flyttningar mellan kommuner.

Resultat

I korthet visar resultaten att kommuner som ökar nybyggnadstakten också får en ökad inflyttning. Resultaten gäller samtliga individer mellan 20 och 74 år. Det är ett intressant resultat som indikerar att nybyggnation inte enbart gynnar de mest resursstarka. För de yngsta vuxna mellan 20 och 24 år är emellertid sambandet relativt svagt om man samtidigt beaktar deras höga flyttbenägenhet. Resultaten kan alltså vara en indikator på att det som byggs främst riktar sig mot relativt resursstarka hushåll.

Resultaten uppvisar större variation angående hur storleken på det befintliga/gamla beståndet påverkar rörligheten. Enligt resultaten indikerar resultaten att kommuner som får ett ökat befintliga bostadsbestånd (per capita) får en ökad inflyttning av individider i kohorterna 25-34, 35-44 och

65-74. Att sambanden inte är signifikanta för alla kohorter kan delvis bero på den relativt låga rörligheten för individer mellan 55 och 74 år samt att vissa ålderskohorter har svårt att konkurrera om befintliga vakanser med andra. Exempelvis har unga vuxna mellan 20 och 24 både förhållandevis låga och volatila inkomster och av naturliga skäl har de oftast inte hunnit stå lika länge i bostadsköer som äldre vuxna.

Resultaten indikerar också att kommuner som ökar sitt befintliga bostadsbestånd får en minskad utflyttning för ålderskohorterna mellan 20 och 54 år. Ovanstående resultat är statistiskt säkerställda och är förväntade då de troligen kan förklaras av att bostadsstocken storlek har en positiv korrelation med antalet vakanser i bostadsbeståndet. Om det blir lättare att få tag i en bostad i den egna hemkommunen blir det mindre sannolikt att man kommer att flytta därifrån. Sett ur en enskild kommuns perspektiv kan alltså ett ökat befintligt bostadsbestånd delvis öka inflyttningen, men det kan också dämpa utflyttningen, troligen p.g.a. att kommuninvånarna då har lättare att flytta till en annan bostad inom hemkommunen.

Vi finner vidare att kommuner som ökar andelen hyresrätter får en ökad inflyttning av individer mellan 20 och 24 år medan motsvarande samband är negativa för kohorterna 35-44 samt 55-74 år. Dessa resultat beror sannolikt på att det finns starka preferenser för att äga sin bostad, medan unga vuxna i hög utsträckning är hänvisade till att hyra eftersom många inte har ekonomiska möjligheter att köpa en bostad. Det kan vidare tolkas som att även om unga vuxna har svårt att konkurrera om bostäder med andra, oavsett upplåtelseform, så framstår hyresrätten som det mest naturliga valet av första egna bostad. Vi finner även stöd för att en ökad andel hyresrätter i det befintliga beståndet har en positiv effekt på utflyttningen av kohorterna 20 -24 år samt 55-64 år. Det förstnämnda kan indikera att det kan vara fördelaktigt att hyra bostad för de som tror att de kommer att flytta igen inom kort, eftersom vi vet att unga vuxna är betydligt mer flyttbenägna än andra. I motsats finner vi negativa och signifikanta samband mellan en ökad andel hyresätter och utflyttning av individer mellan 25 och 54 år. Totalt sett strider dessa resultat mot den allmänna synen att hyresrätten skulle gynna rörligheten i en generell mening, eftersom vi inte får stöd för att det skulle vara så för samtliga ålderskohorter (vi återkommer till denna diskussion längre fram).

I tabell 5 (sid 37) har vi använt de uppskattade regressionssambanden för att uppskatta hur utvecklingen av bostadsutbudet per capita och andelen hyresrätter sedan 1992 har påverkat de olika ålderskohorternas benägenhet att flytta över kommungränser i genomsnitt för perioden 1993-2012.

Kolumn nr 2 visar den totala effekten, d.v.s. hur mycket utvecklingen av antalet bostäder per capita och andelen hyresrätter sedan 1992 påverkat rörligheten och kolumn 3 visar den effekt som uppstått enbart p.g.a. av utvecklingen av antalet bostäder per capita. Tabell 5 (sid 37) visar att utvecklingen av antalet bostäder per capita (kolumn 3, tabell 2, sid 25) sedan 1992 dämpat benägenheten att flytta mellan kommuner för samtliga individer mellan 20 och 54 år. För exempelvis de mellan 25 och 34 blev andelen som flyttat över kommungränserna 4,47 procent lägre i genomsnitt per år p.g.a. av utvecklingen sedan 1992 (tabell 5, sid 37). Resultaten drivs dels av att inflyttningen till storstadsregionerna minskat eftersom antalet bostäder per capita fallit där, dels av att antalet bostäder per capita ökat i andra regioner, vilket i sin tur minskat utflyttningen från dessa regioner.

För de mellan 55 och 74 är resultaten omvända och indikerar att utvecklingen sedan 1992 har gynnat rörligheten över kommungränserna. Det beror huvudsakligen på att det ökande antalet bostäder per capita har ökat dessa individers inflyttning till regioner utanför storstäderna, men till skillnad från övriga ålderskohorter har det inte minskat utflyttningen i motsvarande mån. Klätt i andra ord skulle de avvikande resultaten möjligen kunna förklaras av att individer mellan 55 och 74 uppvisar flyttmönster som avviker från övriga ålderskohorter. Perioden 1993-2012 hade individer mellan 55 och 74 år negativ nettoinflyttning till storstadsregionerna medan nettoinflyttningen till mindre högskolekommuner och övriga kommuner utan högskola/universitet var positiv (se tabell 2, sid 25). Således skulle den pågående urbaniseringen, som i hög grad domineras av att unga vuxna flyttar till storstäderna och större universitetskommuner, kunna vara gynnsam för de äldre eftersom det gör det lättare för dem att flytta till andra delar av landet.

Resultaten är inte heller liktydiga angående hur den minskande andelen hyresrätter i storstadsregionerna påverkat rörligheten. Resultaten indikerar att det påverkat rörligheten negativt för unga vuxna mellan 20 och 24 år och mellan 55 och 64 år, medan effekterna istället är positiva för övriga ålderskohorter (kolumn 4, tabell 5, sid 37). Totalt sett har den minskande andelen hyresrätter sedan 1992 minskat rörligheten för de mellan 20 och 24 år med ca 1,25 procent per år och med 0,13 procent per år för de mellan 55 och 64 år. Den minskade andelen hyresrätter i storstadsregionerna har försvårat såväl inflyttning som utflyttning av unga vuxna mellan 20 och 24 år medan den svagt negativa effekten för kohorten 55-64 (kolumn 4, tabell 5, sid 37) beror på att den minskande andelen hyresrätter gjort dessa individer mindre benägna att flytta från sin bostad. För de övriga ålderskohorterna antyder resultaten dock motsatsen, vilket dels

skulle kunna spegla starka preferenser för att äga sitt boende, och att de som hyr sin bostad i dessa ålderskohorter betraktar det som minst lika permanent och varaktigt som de som äger sin bostad. För många unga vuxna kan det istället vara fördelaktigt att hyra bostad av den anledningen att det är troligt att de kommer att flytta igen om en snar framtid (vi vet att unga vuxna är betydligt mer flyttbenägna än andra). Därmed kan resultaten vara en indikator på att den högre omflyttningen i hyresrättsbeståndet än i ägarrätts- och bostadsrättsbeståndet till stor del drivs av skillnader i åldersfördelning. Eftersom unga vuxna är överrepresenterade i hyresrättsbeståndet och de dessutom har en betydligt högre benägenhet att flytta än övriga ålderskohorter är det troligt att unga vuxna står för en stor del av omflyttningen i hyresrättsbeståndet.

Totalt sett (kolumn 2, tabell 5, sid 37) ser vi att rörligheten påverkats negativt för alla mellan 20 och 54 år, där de negativa effekterna är som starkast för de som är som mest rörliga d.v.s. de för de mellan 20 och 34 år. Som nämndes ovan har de mellan 20 och 24 år påverkats negativt av både hur antalet bostäder per capita och andelen hyresrätter utvecklats. De negativa effekterna för de mellan 25 och 54 år (kolumn 2, tabell 5, sid 37) beror uteslutande på hur antalet bostäder per capita utvecklats. För de mellan 55 och 74 år är effekterna istället positiva, vilket kommenterades ovan.

Som avslutning frågar vi oss hur utvecklingen sedan 1992 påverkat rörligheten för olika regioner. Tabell 6-7 (sid 42-43) visar våra uppskattningar över hur rörligheten i de sju regioner som definierades ovan påverkats av hur antalet bostäder per capita och andelen hyresrätter utvecklats sedan 1992. Värdena är genomsnitt per år för perioden 1993-2012 och avser relativa effekter (%). Vi delar upp resultaten i effekter på ”mellankommunala flyttningar” inom regionerna samt effekter på inflyttning och på utflyttning från/till andra regioner.

Det är samma bakomliggande faktorer som driver resultaten i tabell 6 och 7 som i tabell 5. Beräkningarna indikerar bl.a. att Storstockholms årliga inflyttning av individer mellan 20 och 24 hade varit ca 12 procent högre om antalet bostäder per capita och andelen hyresrätter hade konstanthållits på 1992 års nivå (tabell 6, kolumn 3, sid 42). Vidare kan vi se att utvecklingen sedan 1992 påverkat inflyttningen till storstadsregionerna invånare negativt för samtliga ålderskohorter. Förutom för individer mellan 20 och 24 år, drivs de negativa effekterna på rörligheten uteslutande av hur antalet bostäder per capita utvecklats. Antalet bostäder per capita har minskat i storstadsregionerna men ökat i andra regioner och som ett resultat har inflyttningen till storstadsregionerna fallit (vilket därmed innebär

att utflyttning från andra regioner också minskat). De unga vuxna har dock även påverkats negativt av att andelen hyresrätter fallit. Som kan utläsas ur tabell 7 (sid 43) ser vi även att utvecklingen av antalet bostäder per capita påverkat inflyttningen till kommuner i kommuntyperna 5 och 6 negativt (de olika kommuntyperna definierades på sidan 7). Det beror i mycket hög utsträckning på att det ökade antalet bostäder per capita i kommuntyp 7 minskat utflyttningen från dessa kommuner.

Avslutning

Sammanfattningsvis står följande ut: 1) utvecklingen av det fysiska bostadsbeståndets storlek (per capita) sedan 1992 har minskat inflyttningen till storstadsregionerna för samtliga mellan 20 och 74 år. Totalt sett har rörligheten påverkats negativt för individer mellan 20 och 54 medan effekterna varit positiva för individer mellan 55 och 74. Det sistnämnda resultatet beror sannolikt på att dessa individer snarare lämnar storstadsregionerna än flyttar till dem. 2) Sambanden mellan nybyggnation och inflyttning typer på att byggandet framför allt riktat in sig på relativt resursstarka hushåll, även om det gynnar rörligheten för alla. 3) Den minskande andelen hyresrätter i storstadsregionerna har framför allt haft negativa effekter för unga vuxna mellan 20 och 24 medan det gynnat rörligheten för kohorterna 25-54 samt 65-74.

Resultaten ger ljus åt de positiva effekter som skulle kunna uppnås om byggandet ökar, och att det bör ligga ett visst fokus på fler ”prisrimliga” hyresrätter, i varje fall om man vill underlätta för de nya hushåll som ska bildas. Att utvecklingen sedan 1992 gynnat rörligheten för de mellan 55 och 74 år visar istället att bostadsbehovet kan variera mellan olika regioner. I storstadsregionerna bör de nya bostäderna kanske i högre grad rikta sig mot unga vuxna än i andra delar av landet, i alla fall på kort sikt. I den mån man kan bygga bostäder som är både ”prisrimliga” och som kan uppfylla olika typer av bostadsbehov alternativt snabbt kan anpassas när nya behov uppstår är det naturligtvis en önskvärd målsättning.

Även om vi i denna rapport har fokuserat på hur det fysiska beståndet av bostäder påverkar rörligheten, är det viktigt att påpeka att rörligheten påverkas av många olika faktorer. Grundläggande anledningar till varför folk flyttar kan vi många gånger inte påverka, men det är viktigt att det inte finns alltför stora hinder för människor att röra på sig när behov eller önskemål uppstår. Det är också viktigt att incitamentsstrukturen i befintliga regelsystem inte avhåller människor från att flytta. En långsiktig hållbar bostadspolitik kräver sannolikt en bred översyn av olika politikområden.

Abstract

In Sweden, although housing standards are high and young adults leave the parental home relatively early, there are indications that for certain groups housing has in recent years become less accessible. We model intermunicipal migration in Sweden between 1993 and 2012 for different age cohorts as a function of characteristics at the origin and at the destination (including housing). The results suggest that (1) decreasing/increasing housing per capita in the metropolitan/non-metropolitan areas since 1992 has dampened the ongoing urbanization process, and (2) there is a strong preference for owned housing generally, as a decreased share of rentals in the metropolitan areas since 1992 has reduced in-migration to these areas among individuals between 20 and 24 years of age while generally having positive effects for the remaining age cohorts. The results suggest that the combined effect of these two developments has affected total intermunicipal migration negatively for all age cohorts except for individuals between 55 and 74 years of age. The negative effects on intermunicipal migration are strongest for those who are relatively mobile—for young adults between 20 and 34 years of age.

1 Introduction

Housing has effects on people's mental and physical health. Also, housing influences residential mobility and may therefore have significant impacts on the labor market, the economic growth process, and the ongoing urbanization process (see, e.g., Hyclak and Johnes, 1999; Saks, 2008; Peng et al., 2011). In recent years, the Swedish public have witnessed an intensification of public debate on housing, provoked by low levels of new construction over two full decades and high population growth since the start of the new millennium. Throughout the country, inflation-adjusted housing prices are historically high, having increased steadily after hitting rock bottom in 1995, and in many places—particularly in central urban locations, in both large and small cities—the wait-times of the queues for rental units amount to several years (The Swedish Union of Tenants, 2014). High housing prices exclude some households from owning, and renting is not always possible, as there are few vacancies and landlords may reject those with low incomes, no employment, or a track record of non-payment (Swedish National Board for Housing, Building and Planning, 2014b; Hem och Hyra, 2012). Aggregated data show that some groups, such as low-income households and young adults, are more negatively affected by the situation than are others. For example, in recent years the percentage of young adults still living in the parental home has increased (Swedish Union of tenants, 2015; Statistics Sweden, 2008). Also, young immigrants and low-income households are overrepresented in rental housing[1], and the total housing percentage that represents rental units has decreased for two decades, due to the tenure conversion of a considerable number of rental units to co-operative housing and to decreased new construction (see section 2).

The population's changing housing needs can be met either through new construction or turnovers of existing dwellings (or both). New construction, although not affordable for all, can initiate vacancy chains that liberate dwellings that are financially accessible to households at the lower end of the income spectrum (see, e.g., Magnusson Turner, 2008; Knox, 1995). However, in recent years there has been little research on the effect of housing on mobility in a Swedish context. Existing surveys, which have often been based on micro data, are becoming obsolete and

[1] For instance. the share of young adults between 20 and 24 years of age living in rentals was 36 percent in 2014. The average for all age cohorts was 26.5 percent. 46.6 and 21 percent with non-Swedish background and Swedish background lived in rentals, respectively. Source: Statistics Sweden, www.scb.se.

usually have limited geographical coverage[2]. Clearly, there is a need for research that analyses the effect of housing on mobility in Sweden from a broad geographical perspective. Also, while there is a broad international literature on the importance of the functioning on the housing market for mobility, investigations into the effect of the physical housing stock on mobility are still relatively rare (see, e.g., Glaeser et al., 2005.

The objective of this paper is to investigate the effect of the size of the existing stock of dwellings (per capita), the level of new construction (per capita) and the tenure distribution (the share of rented dwellings) on the intermunicipal mobility of different age cohorts (20–24, 25–34, 35–44, 45–54, 55–64, and 65–74). Using a panel with annual data from Sweden's 290 municipalities, we model the intermunicipal migration of different age cohorts as a function of push and pull factors at the origin and the destination. We distinguish between different age cohorts because individuals of different ages have varying needs for housing, and because age is correlated with the ability to find suitable housing. For instance, we know that young adults have relatively low incomes[3], and recent reports suggest that in recent years young adults' housing situation has worsened in comparison to other age groups. Also, the decreasing share of rentals over the past two decades should affect the mobility of different age cohorts differently, as young people are overrepresented in the rental sector. Furthermore, intermunicipal migration rates are considerably higher for young adults than for other adults (see figure 7).

The rest of the paper is organized as follows: The next section, section two, relates previous research to the situation in the Swedish housing market in the past two decades and positions the paper's contribution in an international research perspective. Section three describes the model and the data, section four presents the empirical results, and section five concludes the paper.

[2] For instance, Ball (2002) used data from nine properties in the innercity of Stockholm and found that tenure conversions led to increased mobility and reduced the number of inner-city rental vacancies. Magnusson Turner (2008 simulates Markov Vacancy Chains in the City of Stockholm. She finds, amongst other things, that new vacancies were often claimed by households moving in from other local markets and that vacancy chains generally transfers within the same submarkets. Emmi and Magnusson (1995) evaluates different chain vacancy models using census data for Västerås, Gävle and Jönköping from 1975, 1980, 1985, 1990.

[3] In 2013, earned per capita incomes for individuals between 20 and 24 amounted to 44 percent of earned per capita incomes for individuals between 20 and 64. Source: Statistics Sweden, www.scb.se.

2 The situation on the Swedish housing market and previous research

This paper relates to previous studies that have analysed determinants of internal migration at the macro level and to research about the mobility and housing careers of various segments of the population such as different age cohorts. At the macro level, researchers have studied the effects of parameters such as housing prices, tenure forms, housing policies, and demographic and economic conditions on regional mobility (Andrews and Caldera Sánchez, 2011a; Cunningham and Engelhardt, 2007; Hilber and Lyytikäinen, 2012; Smith and Smith, 2007; Ermisch and Washbrook, 2012; Ferreira et al., 2010; Engelhardt, 2003). Micro-level studies have often focused on the decision process and how individual characteristics influence the people's housing choices (Dieleman, 2001). For example, several studies have established that people's residential mobility depends on the current state of the economy (mortgage rates, business-cycle fluctuations, etc.) and on their own personal characteristics for, example, educational level, social networks, and knowledge about the housing market (Murphy and Wang, 1998; Whittington and Peters, 1996; Mulder and Clark, 2000). Further, research has shown that people's ability to find suitable housing is relatively limited at the beginning and at the end of their housing careers (Clark och Dieleman, 1996).

Although Sweden has relatively high housing standards[4], and between 1970 and 1990 housing was relatively accessible generally, there are indications that in recent years housing has become less accessible for some groups. For instance, between 2000 and 2013, the average age for leaving the parental home increased, for both women and men (Statistics Sweden, 2015a). Also, according to a survey by the Swedish Union of Tenants (2015), between 1997 and 2015 the proportion of young adults between 20 and 23 still living with their parents increased from 25 to 31 percent. Further, between 1992 and 2012 the number of municipalities that declared a general "lack of housing" increased from 22 to 126 (Swedish National Board for Housing Building and Planning, 1994; 2013a).

[4] For example, the share of the population in Sweden residing in "good housing standards" was 91.8 percent in 2009. The average for EU27 was 77.8 percent. Also, the share of individuals between 20 and 34 years of age still living with their parents was 18.5 percent in 2008. The average for EU27 was 45.8 percent. (Statistics Sweden, 2011).

And, as many as 246 municipalities declared a lack of rentals in 2012, which would presumably have affected young adults in particular.

Figures 1 and 2 illustrate that construction of new dwellings has been low since the early 1990s and that the decline is mainly due to decreased construction of rented dwellings. Further, figure 3 shows that population growth has been relatively high since the start of the new millennium. Current projections predict continued high population growth over the next few years, mainly because of high levels of refugee immigration (National Board for Housing, Building and Planning 2015; Statistics Sweden, 2015b).

Figure 1. Total new construction in Sweden 1960-2012 (Source: Statistics Sweden)

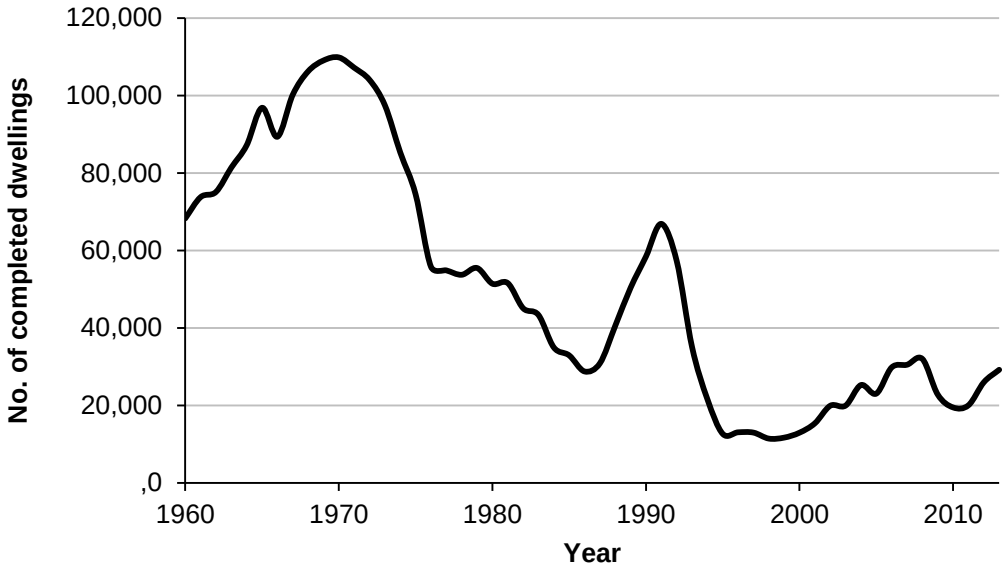


Figure 2. New construction in Sweden 1991-2012, by tenure (Source: Statistics Sweden)

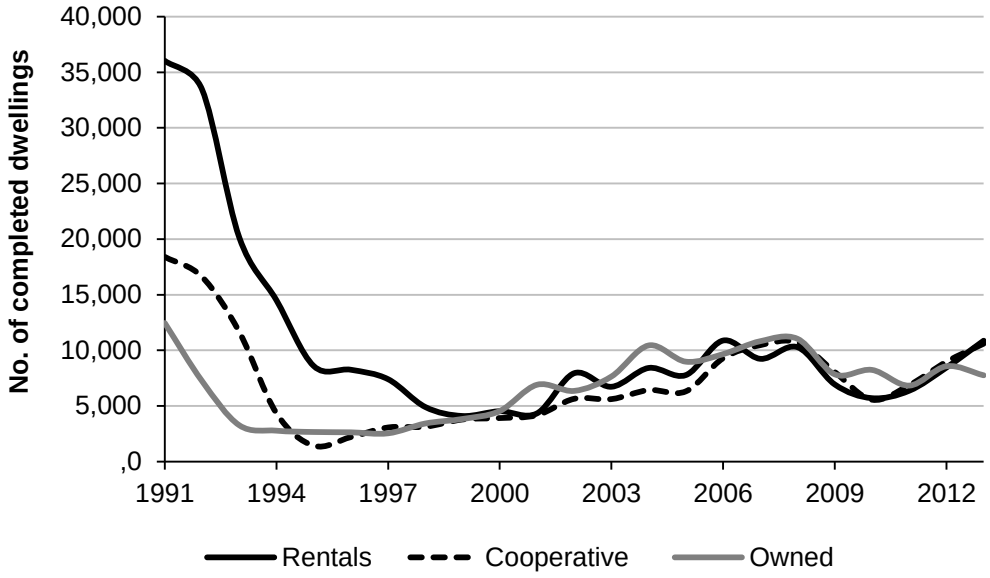
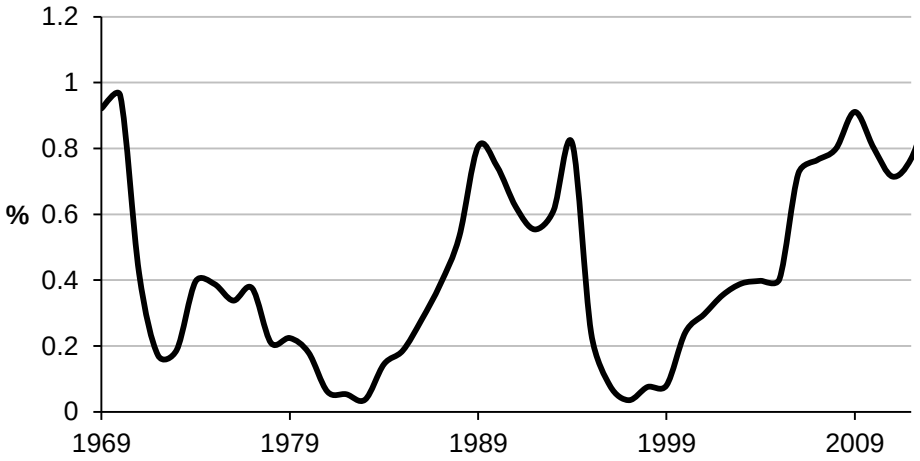


Figure 3. Annual population growth (%) in Sweden (Source: Statistics Sweden)



Several factors can explain the relatively low levels of new construction from the 1990s onwards; there was an economic recession between 1992 and 1998, real interest rates increased, and the government raised VAT on new construction, abrogated interest rate subsidies on new construction of rentals, and reduced interest deductions on mortgage loans (National Housing Credit Guarantee Board, 2011). Other reasons

for the decline are, to mention some, high construction costs, a strict model of rent control, and poor competition in the construction sector (see, e.g., European Commission, 2014; Swedish National Board for Housing, Building and Planning, 2013b, 2014a; Hüfner and Lundsgard, 2007; Swedish Competition Authority, 2013; Swedish Financial Supervisory Authority, 2013; Ministry of Health and Social Affairs, 2013; Ministry of Finance, 2002; Lind, 2003; National Housing Credit Guarantee Board, 2008; Swedish Ministry of Justice, 2013).

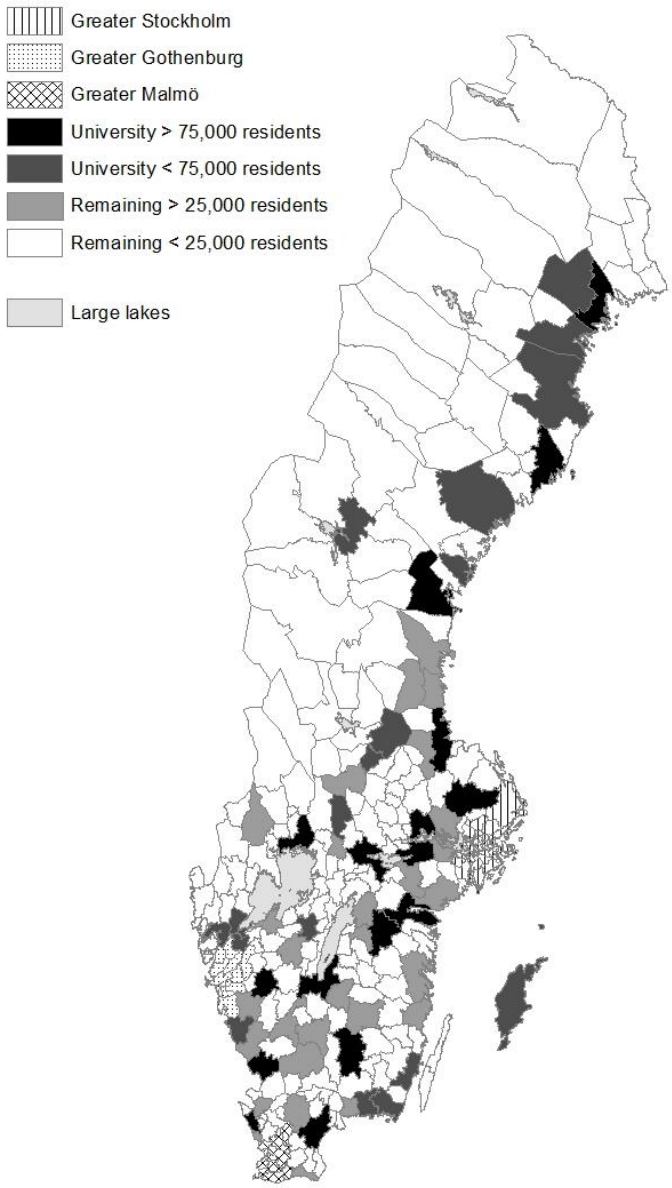
We now turn to the comparison of different regions and different types of municipalities. While there is a certain degree of arbitrariness to all classifications, we adhere to a commonly used one that we argue accurately represents different types of municipalities with positive or negative net (internal) migration. To do this, we clustered Sweden's 290 municipalities into the following categories[5]:

1. Greater Stockholm (the capital region and the largest metropolitan area)
2. Greater Gothenburg (the 2nd largest metropolitan area)
3. Greater Malmö (the 3rd largest metropolitan area)
4. University municipalities with more than 75,000 residents
5. University municipalities with less than 75,000 residents
6. Remaining municipalities with more than 25,000 residents
7. Remaining municipalities with less than 25,000 residents

Figure 4 shows the locations of the seven categories in Sweden. Municipalities that belong to the three metropolitan regions are geographically adjacent, which is however not the case with the other regions.

[5] This categorisation is used by different government authorities. See e.g. the Swedish National Board of Housing, Building and Planning, 2013b. We use the most recent division from 2014.

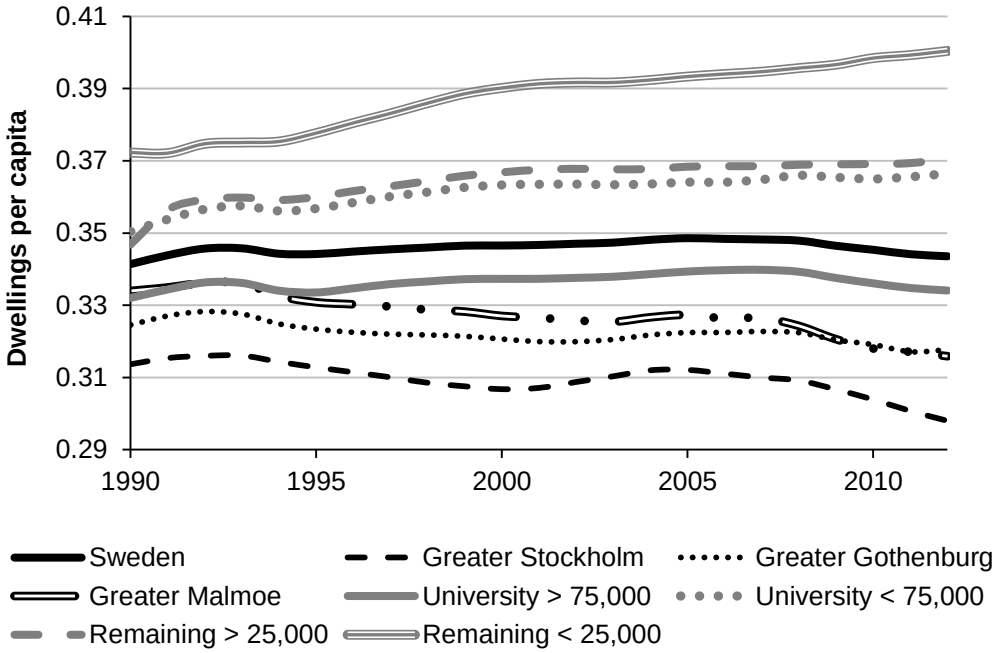
Figure 4. Geographical location for different types of municipalities



To illustrate how total housing consumption per capita has developed since the 1990s, we use data on the total number of dwellings and the average size within each tenure form to express the total living space (in square meters) measured as the number of "owned-equivalent (in terms of living space)" dwellings.

This means that each form of tenure is weighted in accordance with the associated average living space[6]. Figure 5 illustrate how the number of "owned-equivalent" dwellings per capita developed between 1990 and 2012.

Figure 5. Owned-equivalent dwellings per capita between 1990 and 2012



Despite the decreased levels of new construction (see figures 2 and 3), the national average of housing per capita was almost constant between 1990 and 2012. However, there are considerable regional variations. In the three metropolitan areas (i.e., Greater Stockholm, Greater Gothenburg, and Greater Malmö), the amount of owned-equivalent dwellings per capita was lower in 2012 compared to the early 1990s (figure 5). In university towns with more than 75,000 residents, the amount of owned-equivalent dwellings per capita remained more or less constant throughout the period. The remaining categories display a reversed pattern, and figure 5 illustrates that the number of owned-equivalent dwellings per capita has increased for these regions. Researchers have analysed how the physical housing stock relates to

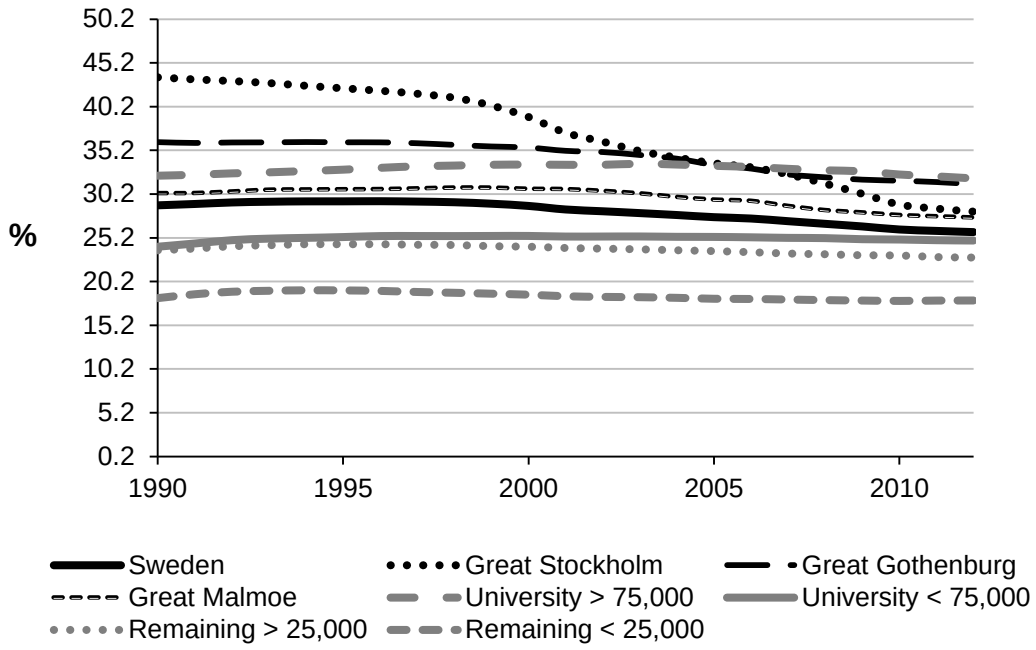
[6] We used tenure average size for the period 2006-2012 and assigned the following weights. Owned dwellings=1. Cooperative housing=0.548. Rentals=0.513. Average size (in square metres) is not available back to the 1990 and available data is based on a random selection of dwellings. We therefore use average tenure size from the samples between 2006 and 2012 to determine the weights. (Source: Statistics Sweden , www.scb.se)

mobility, which is also an objective of this paper. At the macro level, some studies have found a negative relationship between the size of the physical stock of housing and (internal) mobility (see, e.g., Bloze, 2009; Caldera Sanchez and Andrews, 2011b; Glaeser et al., 2005; Hämäläinen and Böckerman, 2004; Ghatak et al., 2008). However, the importance of the housing supply in economic development still needs further exploration. For instance, Glaser et al. (2005, p. 1) pointed out that "The modern literature on urban growth and economic geography generally ignores housing supply". And, while reviewing research on land-use restrictions, Vermeulen and Ommeren (2009, p. 294) concluded that "This literature enables us to understand the impact of land use regulation on the functioning of housing markets but its wider effects on regional economies have received significantly less attention". At the micro level, researchers have analysed the relationship between new construction and vacancy chains. Magnusson Turner (2008) simulated Markov Vacancy Chains in the City of Stockholm. She found that new vacancies are often claimed by families from nearby regions and that arising vacancies generally generated new movements between similar dwellings.
Emmi and Magnusson (1995) evaluated different chain vacancy models using census data for Västerås, Gävle, and Jönköping from 1975, 1980, 1985, and 1990. We attempt to extend previous studies by using aggregated data to analyse how housing and tenure distribution affect the intermunicipal mobility of different age cohorts.

Figure 6 illustrates how the share of rentals' in the total living space has changed since 1990 (i.e. the share of owned-equivalent rentals). The share of "owned-equivalent" rentals fell from about 29 to 26 percent between 1990 and 2012, which was entirely driven by the metropolitan areas (Greater Stockholm, Greater Gothenburg, and Greater Malmö)[7]. This is partially because the decline in new construction during the early 1990s was particularly pronounced for rented dwellings (see figure 2) but it is also an effect of the considerable number of tenure conversions. Between 1991 and 2012, there were about 170,000 tenure conversions (125,000 of these took place in Greater Stockholm)[8]. The high number of tenure conversions reflects a strong preference for owned housing (see, e.g., Swedish National Board for Housing, Building and Planning, 2014b).

[7] Without weighting, the share of rentals fell from 41 to 36 percent.
[8] Author's calculations, based on ordered data from Statistics Sweden.

Figure 6. The share of owned-equivalent rentals (%) in total housing 1990-2012. (Source: Statistics Sweden)



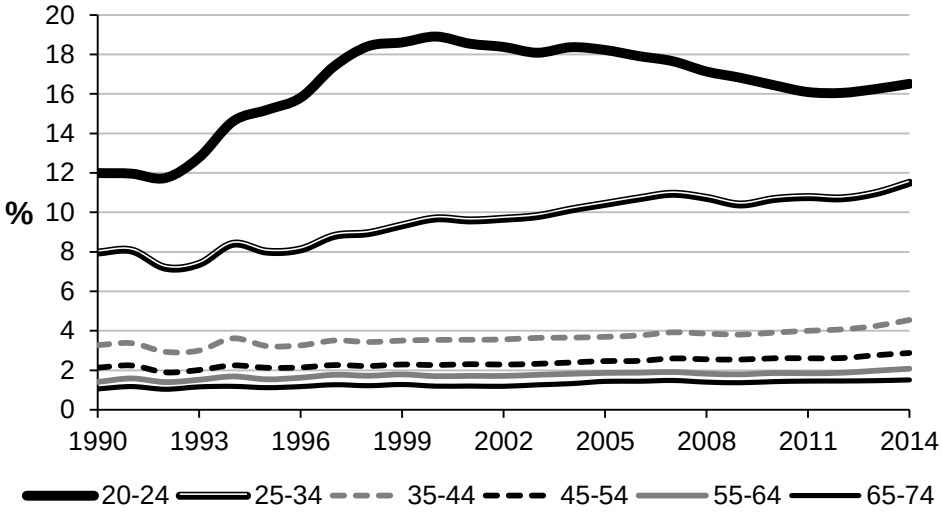
Ever since 1992, when tenure conversions in public housing became allowed, policymakers have shifted between trying to promote and trying to restrict tenure conversions[9]. Research supports the contention that residential mobility increases during tenure conversions and that households with lower incomes are less likely to stay in converted dwellings than are high-income households (Andersson and Magnusson Turner, 2008). Therefore, tenure conversions directly reinforce gentrification. Ball (2002) further argues that tenure conversions can contribute to gentrification indirectly, as they result in fewer rental dwellings (primarily in the inner-city of Stockholm), and low-income households are not able to buy housing in central locations.

Moreover, research has shown that "renters" are more mobile than are homeowners (see, e.g., Hammnet, 1991; Lundberg and Skedinger, 1999; Rohe, 1996; South and Deane, 1993), which is often explained by the low transaction costs of moving for rentals[10]. This indicates that the decreased share of rented dwellings may affect residential mobility negatively. However, in a Swedish context, we do not know whether the turnover

[9] This is described in Andersson and Magnusson Turner, 2008.
[10] Another possible explanation is that relatively mobile individuals choose to stay in rental housing.

rate is relatively high[11] in the rented sector because of comparably low moving costs or because of the overrepresentation of young adults and foreign-born individuals (or both). The Swedish system of rent control is considered strict in an international perspective, which may effectively reduce the turnover rate in the rented sector (Lind, 2003). And, given that previous research suggests that tenure conversions (see above) increase mobility temporarily and reinforce gentrification, this suggests more that the decreased share of rentals reduces the mobility of less resourceful households and increases the mobility of high-income households (at least temporarily).Reduced access to housing may have spilled over into intermunicipal mobility. However, figure 7 shows that although the intermunicipal migration of individuals in the 20–24 age group has decreased in recent years, it has increased continuously for all remaining age cohorts since 1990.

Figure 7. The share of population of each age cohort moving across municipal borders). Source: Statistics Sweden



For those in the 20–24 age group, however, intermunicipal mobility started to decrease after peaking in 2000.

Table 1 illustrates employment and population growth between 1993 and 2012. Table 2 shows the average annual gross population increase/decrease in the seven regions through net migration from municipalities in other regions, for different age cohorts, between 1993

[11] The turnover rates for all publically owned housing (rentals) was 17 percent in 2013. The turnover rate for cooperatives was about 9.6 percent the same year. The turnover rate for "småhus" (mainly owned dwellings) was about 2.7 percent. Source: Statistics Sweden (www.scb.se) and the Swedish Association of Public Housing Companies (SABO).

and 2012. Column 8 shows total net migration also including those below 20 years of age and above 74 years of age.

Table 1. Population and employment growth 1993 - 2012

Group	Employment growth	Employment per capita 2012	Population growth	Population growth adults (age 20–74) (%)	Employment per adult (age 20–74) in 1993 (%)	Employment per adult (age 20–74) in 2012 (%)
1. Greater Stockholm	38	50.4	26.1	26.8	66.6	72.5
2. Greater Gothenburg	36.5	49.3	18.9	20.8	62.9	71
3. Greater Malmö	30.7	44.3	22.8	24.9	61.3	63.9
4. Large university	23	47.3	12.3	14.2	63.7	68.4
5. Small university	14.1	48.1	1.9	4.8	64.2	69.8
6. Remaining >25,000	12.4	47.0	0.8	2.9	63.9	69.4
7. Remaining<25,000	7.5	46.6	-6.4	-2.7	62.4	69.2

Source: Statistics Sweden. Employment is defined as the number of employed municipality residents over 16

Table 2. Average annual population increase/decrease through net internal migration for different age cohorts (%)

Region	Age cohort						Total
	20–24	25–34	35–44	45–54	55–64	65–74	All age classes
1.Greater Stockholm	2.53	1.54	-0.12	-0.05	-0.36	-0.32	0.27
2. Greater Gothenburg	3.36	0.46	-0.01	0.00	-0.24	-0.14	0.30
3. Greater Malmö	3.97	-0.22	0.07	-0.01	-0.11	-0.06	0.32
4. University > 75,000	3.29	-1.40	0.05	0.08	-0.09	0.04	0.20
5. University < 75,000	-1.83	-0.80	0.03	-0.01	0.08	0.15	-0.15
6. Remaining > 25,000	-4.57	0.05	0.31	0.13	0.24	0.24	-0.11
7. Remaining < 25,000	-7.48	-0.15	-0.07	-0.08	0.33	0.07	-0.50

Source: Statistics Sweden, author's calculations. Net migration rates are expressed as gross migration for each age cohort divided by the total population of the specific age cohort, the year prior to migration. This means that columns 2-6 does not add up to column 7.

Tables 1 and 2 reveal some underlying mechanisms of the ongoing urbanization process. The metropolitan regions and large university municipalities have positive net migration, while all others areas have negative net migration. Also, population growth and employment growth are higher in the former category than in the latter. However, upon studying the data in detail we find that in the metropolitan areas and in university municipalities with more than 75,000 residents positive net migration rates are primarily driven by the influx of young adults in the 20–24 age group. The three metropolitan regions and university municipalities with more than 75 000 residents have positive net migra-

tion for individuals between 20 and 24, whereas net migration rates vary for the other age cohorts. For instance, Greater Stockholm has negative net migration for individuals between 35 and 74. Also, while for Greater Stockholm and Greater Gothenburg net migration for individuals between 25 and 34 is positive, for Greater Malmö it is negative. For individuals between 55 and 74, for all the metropolitan regions net migration is negative. By contrast, for the non-metropolitan regions, net migration for individuals between 55 and 74 is mostly positive. For individuals between 35 and 54, net migration is close to zero. In total, the data suggests that the metropolitan areas primarily attract young adults, while they lose individuals in the older segment of the labor force, and that the situation is reversed for the non-metropolitan regions, particularly in municipalities without universities.

In this section, we have demonstrated distinct differences between municipalities in categories 1–4 and 5–7. In metropolitan areas and university municipalities with more than 75,000 residents (1–4), net internal migration is positive, population growth and employment growth relatively high. In all other regions (5–7) net internal migration is negative, population growth and employment growth low. In categories 1–3, housing per capita was lower in 1990 than in 2012, while in categories 5–7, it was higher. Consequently, we should expect that changing circumstances in the housing market have varying effects for different types of municipalities.

3 Methodology and data

The data is from Statistics Sweden and the Swedish Transport Administration. The data on migration between municipalities was sorted by origin, destination, and age[12]. The model is a modified gravity model that estimates intermunicipal migration flows as a function of push and pull factors at the destination and the origin (see, e.g., Greenwood, 2005). For confidentiality reasons, migrants were divided into the following age cohorts: 20–24, 25–34, 35–44, 45–54, 55–64, and 65–74. We focus on individuals in their productive age, that is, 20–74[13]. We employ panel data containing annual municipal data from 1993–2012:

$$\left(\frac{MIG^{age}{}_{zw,t}}{POP^{age}{}_{z,t-1}} \right) \cdot 100 = \alpha + \mu_{zw} + \mu_t + \beta_z \cdot X_z + \beta_w \cdot X_w + \xi_{zw,t} \qquad (1)$$

$MIG^{age}_{zw,t}$ is the number of individuals in the age cohort *age* (20–24, 25–34, 35–44, 45–54, 55–64, 65–74) who migrated from municipality *w* to *z* during year *t*. $POP_{z,t-1}{}^{age}$ is the size of the population in the cohort age at the destination (municipality *z*) one year prior to the year of their migration. Hence, the dependent variable is the gross increase (in percent) of the population in cohort *age* during year *t* that municipality *z* obtains through migration from municipality *w*. Explanatory variables at the destination and the origin are in the X_z – vector X_w – vectors, respectively. β_z and β_w are the vectors of parameters to be estimated. We employ Driscoll-Kraay standard errors that are robust to heteroroskedasticity as well general forms of serial and spatial autocorrelation. Although the consistency of Driscoll-Kraay's correction relies on a large number of time periods, it has been found superior compared to OLS, White's, Rogers, and Newey-West standard errors when cross-sectional dependence is present, even when the number of time periods is relatively small[14]. We lag most of the explanatory variables (except for new construction and municipal tax rates) by one year in order to avoid reverse causality. As new

[12] This was ordered specifically as it not officially available at Statistics Sweden's Website. While the total number of in-migrants and out-migrants as well as their age are officially available, all migration flows sorted on origin and destination municipalities are not.

[13] Hence, we exclude those who are not expected to have finished secondary school (<20 years of age) and "seniors" (75+).

[14] Hoechle (2007) performed Monte-Carlo simulations for different values of T (5<T<40). In this paper, T=20. We employ the xtscc command in Stata to obtain Driscoll-Kay's standard errors.

construction refers to completed dwellings, and the construction process often lasts for several years, there should not be a problem with reversed causality in the sense that new construction is predetermined.

The variables of main interest are the stock of existing dwellings per capita (lagged), new construction per capita, and the share of existing dwellings and of new construction that consists of rentals. We exclude housing prices because they may be endogenous to other housing market variables (or to other explanatory variables). Hence, the included housing market variables have indirect effects on mobility if they affect housing prices. We distinguish between the existing stock of housing and new construction for primarily two reasons: new construction and existing dwellings are not equally affordable. Also, a new dwelling always generates a minimum of one vacancy whereas new vacancies among existing dwellings only arise due to specific events, such as deaths or out-migration/emigration. We expect an increased stock (total already existing) of dwellings and new construction per capita to promote in-migration and possibly to prevent out-migration. However, the effects may differ between different age cohorts. Young adults have volatile and low incomes, and increasing the amount of existing dwellings per capita and/or new construction per capita may benefit the in-migration of young adults relatively little compared to that of older individuals. However, as young adults are relatively mobile (see, e.g., figure 7), they are probably also more active than are other age cohorts in trying to claim new vacancies, which suggests more that an increased existing stock of housing per capita and/or new construction per capita may stimulate the mobility of individuals between 20 and 24 more than that of other cohorts. Further, an increased share of rentals may be either positively or negatively correlated with in-migration/out-migration. Relatively low transaction costs associated with moving may promote in-migration as well as out-migration, but a strong preference for owned housing may have negative effects on in-migration (Recall the discussion in section 2). Again, the effects may differ between age cohorts as we know that young adults are overrepresented in rental housing.

The control variables were chosen based on common knowledge and conventional theory about the determinants of migration. We know, for instance, that age, level of education, and country of origin are important factors that affect the likelihood of individuals to migrate (see, e.g., Cushing and Poot, 2004, Hämäläinen and Böckerman, 2004; Westerlund, 1997; Bloze, 2009). Also, individuals will migrate if they expect monetary gains (Sjaastad, 1962; Todaro, 1969; Harris and Todaro, 1970). Therefore, we include explanatory variables that represent “economic op-

portunities" and population characteristics at both the destination and the origin and that are likely to affect turnover rates among existing dwellings. Further, individuals may base their choice to migrate on local facilities (e.g., infrastructure, education, and health care) and on the geographical distance between the origin and destination. Research has shown that increased moving costs negatively influence people's propensity to migrate, and a relatively great geographical distance between the origin and the destination implies relatively high costs of moving, both economically and psychologically (Greenwood, 2005). We do not have access to long time series data on the quality of local facilities at the municipal level. However, we include fixed municipality effects (μ_{zw}) that capture the geographical distance between the origin and the destination and other "permanent components" of local facilities. Another factor that affects local amenities is the municipal tax rates (*TAX, OR_TAX*), which are included as well. Since we model bidirectional migration flows (all municipalities have both in-migration and out-migration to and from all the other municipalities), the number of fixed effects amounts to $n \cdot (n\text{-}1)$, where n is the number of spatial units (286)[15].

We also include fixed year effects (μ_t) that represent time-specific factors that have symmetrical effects on migration flows between all municipalities. The magnitude of μ_t depends on parameters such as business cycle fluctuations, mortgage rates, and housing policies (e.g., capital gains taxation). And, as intermunicipal migration flows from a particular origin (*w*) to a particular destination (*z*) are likely to be affected by all migration flows from the same origin, we include *SPATIAL MIGRATION*, which controls for all municipal out-migration from *w* and accounts for the geographical distance between *z* and remaining destination areas. Except for population, we do not include the explanatory variables expressed as ratios between the origin and the destination. So we do not force "symmetry" on the model, and consequently migrants must not respond similarly to identical changes in explanatory variables at the origin and the destination (see, e.g., Ghatak et al., 2008). A symmetrical model requires, for example, that migrants have equal information about the origin and the destination and that any variable that is positively correlated with in-migration must be negatively correlated with out-migration, and vice versa. Unexplained migration flows are in the residual ($\varepsilon_{zw,t}$). Table 3 contains a description of all variables.

[15] If migration were "one-way-flows", e.g. if we would have studies only in-migration (or net-migration), the number of fixed effects would have amounted to n*(n-1)/2==40 755.

Table 3 Description of variables in equation (1). Variables with prefix "*OR*" are characteristics at the origin municipality in equation (1). All variables are municipal-level data.

Name of variable	Description/Definiton
Mig^{age}	$\left(\frac{MIG^{age}{}_{zw,t}}{POP^{age}{}_{z,t-1}}\right)\times 100$. Gross population growth of individuals in age cohort *age* (20–24, 25–34, 35–44, 45–54, 55–64, 65–74) (in percent) during year t in municipality *z* through migration from municipality *w*.
SPATIAL_MIGRATION	$100 * \frac{1}{POP_{z,t-1}} \sum_{iw(i\neq z, i\neq w, w\neq z)} \frac{MIG_{iw,t-1}}{\exp(d_{iz})}$ The sum of distance-weighted (in 10 km, d_{ij}) migration flows from *w* to other municipalities (*i*) excluding *z* in relation to population at *z (%)*.
$HOUSING_{z,t-1}$ *and OR_HOUSING*	The number of "owned-equivalent" dwellings per capita. The following weights are used: owned dwelling=1; cooperative dwelling=0.548; rental=0.513. Lagged by one year.
NEW_CONSTRUCTION OR_NEW_CONSTRUCTION	The number of "owned-equivalent" dwellings completed through new construction in year t divided by the population in year t-1.
RENTALS and OR_RENTALS	The share of owned-equivalent rentals (%) in the stock of housing. Lagged by one year.
RENTALS_NEW and OR_RENTALS_NEW	The share of rentals (owned-equivalent) in new construction.
TAX and OR_TAX	Municipal tax rate (%).
DEATHS and OR_DEATHS	The share of population that died (%). Lagged by one year.
POP2034 and OR_POP2034	Share of population of age 20–34 at the destination (%). Lagged by one year.
EMPLOYMENT and OR_EMPLOYMENT	The number of employed individuals divided by the population of age 15–74 (%). Lagged by one year.
ΔEMPLOYMENT and OR_ΔEMPLOYMENT	The percentage change of the number of employed individuals. Lagged by one year.
UNI	The share of people of age 15–74 with at least three years of tertiary education (%). Lagged by one year.
RZI and OR_RZI	Relative specialization in the primary sector. The primary sector is agriculture, fishing, hunting, and forestry. *RZI* is defined as = $\frac{L_{ri}/L_i}{L_r/L}$*100 where *L* is the total population in Sweden or in township *i*. *r* denotes sector (which equals the primary sector in in this case). Lagged by one year.
NET_INT_MIGRATION OR_NET_INT_MIGRATION $_1$	Population growth through net immigration from abroad.
NAT_POP_GROWTH and OR_NAT_POP_GROWTH	Net population growth from childbirth and death. Lagged by one year.
ΔECPOT and OR__ΔECPOT	The first difference of the natural logarithm of the "Economic Potential." Economic potential is defined as: $\sum_i \frac{M_j}{\exp(d_{ij})}$ where M_j is the "economic mass" of township *j* (real earned income). d_{ij} is the distance (in 10 km) between the main communities in municpality *i* and *j*. Lagged by one year.
$ORPOP^{age}/POP^{age}$	The ratio between the population of age cohort *age* at the origin and at the destination. Lagged by one year.
OR_UNI^{age}	The share of age cohort *age* with at least three years of tertiary education (%). Lagged by one year.

4 Empirical results

4.1. Regression results

Table 4 shows the regression results from equation (1). Variables with the prefix "*OR*" represent characteristics at the origin municipalities while remaining variables are characteristics at the destination. Consequently, we can say that variables with the prefix "*OR*" explain municipal out-migration whereas characteristics at the destination explain in-migration. In table 4, we present estimation results of equation (1) for different age cohorts between 20 and 74. Variables that were not significant at the 5-percent level were removed. Table 8 in the appendix shows the initial regressions, in which all the explanatory variables were included.

First, the results suggest that there are some common underlying factors that affect all out-migration regardless of the intended destination (*SPATIAL_MIGRATION* is strongly positive for all cohorts except the 65–74 cohort).

Second, the results confirm the importance of factors that affect residential turnovers. For instance, deaths generate housing vacancies and *DEATHS* is positive for individuals between 35 and 54 while *OR_DEATHS* is negative for the 25–34 cohort. Also, young adults are highly mobile and *OR_POP2034* is positive for all age cohorts while *POP2034* is positive for individuals between 35 and 44. *OR_NET_INT_MIGRATION* is positive for individuals of age 35–44, reflecting high mobility rates among immigrants (international migration rates at a certain location should be positively correlated with the share of immigrants at that location). Individuals with higher education are generally relatively mobile and OR_UNI_{age} is positive for individuals between 20 and 24. When parameter estimates have unexpected signs, there may be other explanations. For instance, *POP2034* is negative for the youngest adults (20–24 and 25–34 cohorts); a possible explanation is that individuals between 20 and 34 compete for similar dwellings and that potential in-migrants are crowded out by municipal residents of similar age. Similarly, *NET_INT_MIGRATION* has a negative relationship with migration for the 20–24 cohort, possibly reflecting that young adults and immigrants have similar preferences for housing (i.e., rentals). OR_UNI_{age} is negative for the 25–34 cohort, which may reflect that those with higher education need to move greater distances to find suitable jobs while also becoming less prone to move once occupation has been found. It may also reflect that highly educated individuals who have already

found a suitable job are less likely to move at the age when childbearing is common. *UNI* is negative for individuals of 20–24, 35–44, 45–54, and 55–64 years of age possibly reflecting that housing prices are high in areas where the level of education is high, which prevents in-migration.

Third, variables that affect economic growth and employment opportunities are important determinants of migration. Δ*ECPOT* and *OR_*Δ*ECPOT* is positive and negative for the 20–24 cohort, which suggests that migrants (young migrants in particular) are drawn to regions of high economic growth. We also include employment growth *(*Δ*EMPLOYMENT*, *OR_*Δ*EMPLOYMENT*), as migrants may be drawn to locations where employment increases rapidly, rather than to locations where employment is high. There is a positive and significant relationship between Δ*EMPLOYMENT* and intermunicipal migration for individuals between 20 and 34, indicating that labor migrants are highly represented among young adults. An increased specialization in the primary sector at the destination (*RZI*) is negative for individuals between 25 and 34 while *OR_RZI* is positive. This indicates that there are negative net flows of young adults into the primary sector. Surprisingly, *OR_*Δ *EMPLOYMENT* is positive for the 20–24 cohort, possibly reflecting, however, that labor turnover may be higher in regions where employment growth is high. The positive relationship between *RZI* and internal migration for the 65–74 cohort may reflect that senior citizens appear to be moving from the metropolitan regions (recall table 2) where specialization in the primary sector is relatively low (and where housing prices are high). The same phenomenon may explain why internal migration of individuals between 65 and 74 is also significantly and positively correlated with *OR_*Δ*ECPOT*.

Fourth, the results confirm the importance of general push and pull factors. Increasing the municipal tax rate at the destination (*TAX*) significantly reduces in-migration for three out of six age cohorts. Natural population growth (*NAT_POPGROWTH*) at the destination is positive for four out of six age cohorts, which may indicate a relatively high demand for housing in "child-friendly" areas. Also, natural population growth (*OR_NAT_POPGROWTH*) at the origin is positive for the 20–24 and 35–44 cohorts. Infants generate new needs for housing which may trigger out-migration. However, the municipal tax at the origin (*OR_TAX*) is negative for individuals between 25 and 34. An increased local tax rate may indicate a higher quality of local amenities and result in lower out-migration.

Table 4. Results from estimation of equation (1)

	Dependent variable					
	MIG2024	**MIG2534**	**MIG3544**	**MIG4554**	**MIG5564**	**MIG6574**
SPATIAL_MIGRATION	0.32*** (0.089)	0.89*** (0.087)	0.34*** (0.02)	0.16*** (0.007)	0.08*** (0.01)	n.s.
TAX	-0.00093*** (0.00027)	-0.00073*** (0.00019)	n.s.	n.s.	-0.000001** (0.0000005)	n.s.
HOUSING	n.s.	0.044*** (0.00015)	0.031*** (0.00007)	n.s.	n.s.	0.027*** (0.00004)
RENTALS	0.0003*** (0.00009)	n.s.	-0.00008** (0.00003)	n.s.	-0.00005*** (0.000012)	-0.000067*** (0.00002)
NEW_CONSTRUCTION	0.29*** (0.084)	0.51**** (0.13)	0.17*** (0.0005)	0.092*** (0.036)	0.1*** (0.0002)	0.12*** (0.019)
RENTALS_NEW	0.0000065** (0.0000029)	n.s.	n.s.	n.s.	n.s.	n.s.
NAT_POP_GROWTH	0.002** (0.00073)	0.0014**** (0.00041)	n.s.	0.00063*** (0.00018)	0.0004** (0.0002)	n.s.
∆EMPLOMENT	0.00016*** (0.00004)	0.00009** (0.00004)	n.s.	n.s.	n.s,	n.s.
NET_INT_MIGRATION	-0.0007*** (0.00022)	n.s.	n.s.	n.s.	n.s.	n.s.
UNI	-0.0021*** (0.00016)	n.s.	-0.0002*** (0.00005)	-0.00024*** (0.00004)	-0,00013** (0,00005)	n.s.
RZI	n.s.	-0.00001*** (0.000003)	n.s.	n.s.	n.s.	0.000005** (0.000002)
DEATHS	n.s.	n.s.	0.00096** (0.0004)	0.0005*** (0.00022)	n.s.	n.s.
∆ECPOT	0.00086*** (0.00019)	n.s.	n.s.	n.s.	n.s.	n.s.
POP2034	-0.00048** (0.0002)	-0.00079*** (0.00012)	0.00036*** (0.00013)	n.s.	n.s.	n.s.
EMPLOYMENT	-0.00027*** (0.00007)	-0.00015*** (0.000047)	-0.00003** (0.000011)	-0.000052*** (0.000015)	-0.00004*** (0.0000091)	-0.00005*** (0.00000016)
OR_TAX	n.s.	-0.000012*** (0.000004)	n.s.	n.s.	n.s.	n.s.
OR_HOUSING	-0.17** (0.065)	-0.17*** (0.00035)	-0.067*** (0.017)	-0.031*** (0.000005)	n.s.	n.s.
OR_RENTALS	0.00057** (0.0002)	-0.00033*** (0.00009)	-0.00016*** (0.000029)	n.s.	0.0001*** (0.00005)	n.s.
OR_NEW_CONSTRUCTION	n.s.	n.s.	n.s.	0.00039*** (0.00017)	n.s.	n.s.

	Dependent variable					
	MIG2024	**MIG2534**	**MIG3544**	**MIG4554**	**MIG5564**	**MIG6574**
OR_RENTALS_NEW	n.s.	n.s.	n.s.	-.00000015*** (0.002)	n.s.	n.s.
OR_NAT_POP_GROWTH	-0.002** (0.00028)	n.s.	0.00033*** (0.0001)	n.s.	n.s.	n.s.
OR_EMPLOYMENT	-0.00031** (0.00013)	n.s.	n.s.	-0.00002** (0.00001)	n.s.	n.s.
OR_ΔEMPLOYMENT	0.00017** (0.000074)	n.s.	n.s.	n.s.	n.s.	n.s.
OR_UNI^{age}	0.00017*** (0.00047)	-0.0017*** (0.00019)	n.s.	n.s.	n.s.	n.s.
OR_RZI	n.s.	0.0006*** (0.00011)	n.s.	n.s.	n.s.	n.s.
OR_DEATHS	n.s.	n.s.	-0.0008** (0.00016)	n.s.	n.s.	n.s.
OR_ NET_INT_MIGRATION	n.s.	n.s.	0.0007*** (0.0001)	n.s.	n.s.	
OR_ΔECPOT	-0.00075** (0.00029)	n.s.	n.s.	n.s.	n.s.	0.00013*** (0.00004)
OR_EMPLOYMENT	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
OR_POP2034	-0.00039** (0.00012)	-0.006*** (0.0005)	0.00036** (0.00013)	0.0002*** (0.00005)	n,s,	0.0002*** (0.000045)
ORPOP^{age}/POP^{age}	0.000059*** (0.0000035)	0.000012*** (0.000005)	0.00056*** (0.00007)	0.000006*** (0.000002)	0.000006** (0.000002)	0.00002*** (0.000005)
No. of observations	**1,630,200**	**1,630,200**	**1,630,200**	**1,630,200**	**1,630,200**	**1,630,200**
No. of cross-sections	**81,510**	**81,510**	**81,510**	**81,510**	**81,510**	**81,510**
Adjusted R^2	**0.866**	**0.921**	**0.878**	**0.814**	**0.7333**	**0.586**

Source: Author's estimations. Values in parenthesis are p-values based on Driscoll-Kraay standard errors corrected for heteroskedasticity, serial, and spatial autocorrelation. n.s. refers to variables that were not statistically significant at the five-percent level and were therefore thrown out. There are 290 municipalities in Sweden. However, due to previous "township splitting" eight municipalities was merged to form four: Knivsta+Uppsala, Nykvarn+Södertälje, and Borås+Bollebygd, Örebro+Lekeberg. F-tests support including individual and time-specific fixed effects but these are not reported.

Fifth, the results confirm the importance of "gravity factors" (i.e. population and geographical distance, see .e.g. Greenwood, 2005) and, as expected, migration flows between two distinct areas increases with the population at the origin ($ORPOP_{age}/POP$ age is positive for all age cohorts). Geographical distance between the origin and destination (which is the other gravity factor) is controlled for in the individual fixed effects. F-test supports including fixed individual effects.

Turning to the housing market, the results strongly suggest that new construction stimulates in-migration. Construction of new dwellings at the destination (*NEW_CONSTRUCTION*) is positively and significantly correlated with migration for all age cohorts. The positive relationship is strongest for individuals between 25 and 34, followed by the 20–24 cohort. Increasing the completed number of owned-equivalent dwellings per capita by one unit increases internal migration by 0.5 and 0.29 percentage points for the 25–34 and 20–24 cohorts, respectively. This suggests that new construction stimulates mobility for all, and not only for those with the most resources. However, the stronger relationship for the 20–24 and 25–34 age cohorts probably reflects the relatively high mobility of these age cohorts (recall figure 8). With this in mind, the correlation between intermunicipal migration and new construction is not as strong as it should be for young adults between 20 and 24 years of age. For instance, the internal migration of young adults between 20 and 24 years of age is (on average in 1993–2012) 4.7 times higher than that of the 35–44 cohort (see figure 9), but the parameter estimate for *NEW_CONSTRUCTION* is only about 1.7 times higher. These results indicate that although new construction may stimulate mobility in all age cohorts, new construction is still inaccessible for individuals between 20 and 24 years of age, speaking in relative terms.

Further, the results suggest that increasing housing per capita at the destination (*HOUSING*) promotes in-migration for the following age cohorts: 25–34, 35–44, and 65–74. For example, increasing *HOUSING* by one unit (i.e., by one owned-equivalent dwelling) per capita increased internal migration of young adults between 25 and 34 years of age by 0.044 percentage points. This indicates that *HOUSING* may be positively correlated with the number of turnovers/vacancies in the existing stock of housing. However, *HOUSING* is not significantly correlated with internal migration for the following age cohorts: 20–24, 45–54, and 55–64. Young adults have low incomes and have not been on the waiting list for rented dwellings very long, which may explain why the relationship is insignificant for the 20–24 cohort. For individuals in the 45–54 and 55–64 cohorts, the insignificance may be explained by a relatively strong preference for new construction and/or their relatively low mobility rates (recall figure 7).

By contrast, the results suggest that increasing the existing stock of housing at the origin (*OR_HOUSING*) affects out-migration negatively. *OR_HOUSING* has a negative relationship with migration for individuals up to 54 years of age. This is consistent with previous research which has shown that spacious living reduces incentives to move and that

over-crowded households are more mobile than are other households (Aquilino, 1990; De Jong et al., 1991). Also, note that the absolute value of the parameter estimates for *OR_HOUSING* are larger than the parameter estimates for *HOUSING* for individuals between 25 and 44. And, *OR_HOUSING* is negative and significant for the 20–24 and 45–54 cohorts, whereas *HOUSING* is insignificant. Jointly, these results suggest that characteristics of home communities have a higher influence on people's decision to migrate than do the corresponding characteristics of potential destination areas. A possible explanation for this is that potential migrants have more information about their "home community" than they do about other areas and that there is a bias towards not moving far from home.

Also, we analyse the role of tenure distribution. The results suggest that increasing the share of rented dwellings in total housing at the destination (*RENTALS*) promotes the in-migration of young adults (20–24 years of age) but discourages the in-migration of the 35–44 and 55–74 cohorts. Overall, these results are not surprising, as young adults are overrepresented in rented housing and there are strong overall preferences for owned housing (National Board for Housing, Building and Planning, 2014b). The results are similar, but less strong, for new construction of rentals (*NEW_RENTALS*). An increase of *NEW_RENTALS* is positive for individuals in the 20–24 cohort but negative for those in the 35–44 cohort.

The results also suggest that tenure at origin areas affects out-migration. *OR_RENTALS* is negative for individuals in the 35–54 age cohort but positive for those in the 20–24 and 55–64 cohorts. This suggests that rental-housing tenants are not necessarily more mobile than are home owners. As mentioned previously, turnover rates are higher among rented dwellings than among owned. Consequently, the results may indicate that the higher turnover rate of rented housing is explained by the overrepresentation of young people and non-natives rather than by low transaction costs for moving. On the other hand, the positive relationship for the 55–64 cohort is harder to explain.

Finally, the share of rentals in new construction at the origin (*OR_NEW_RENTALS*) is negatively correlated with internal migration for individuals of 20–24 and 45–54 years of age. This indicates that new construction of rentals may discourage out-migration. Altogether, the fact that internal migration is negatively correlated with *RENTALS*, *OR_RENTALS*, *NEW_RENTALS* and *OR_NEW_RENTALS* for several age cohorts can also indicate that rented dwellings are a common choice

for short-distance moves (within municipalities) but that owned housing is often chosen for long-distance moves (between municipalities). "Within–municipal movers" may find it more natural to register on wait lists for local housing, as they do not expect to move far. Consequently, "Cross-municipal-border movers" may lack realistic alternatives to buying.

4.2. How have housing market developments since 1992 affected intermunicipal mobility?

Now, estimation results from section 4.1 are used to simulate what the potential magnitude of internal migration would have been if housing per capita (*HOUSING*, *OR_HOUSING*) and the share of rentals in total housing (*RENTALS*, *OR_RENTALS*, *NEW_RENTALS*, *OR_NEW_RENTALS*) had remained at the level of 1992 and new construction (*NEW_CONSTRUCTION*, *OR_NEW_CONSTRUCTION*) had matched actual population growth each year. Table 5 shows the estimated average effect of housing developments on intermunicipal migration between 1993 and 2012. Figures 8a–8f illustrate actual and potential migration rates for each age cohort annually between 1993 and 2012. We separate the isolated effects of housing per capita changes and the joint effect of changes in housing per capita and the share of rentals.

Table 5. Average effect (1993-2012) of changes in housing per capita and the share of rentals in total housing on intermunicipal migration (%) for different age cohorts

Age cohort	Total effect (Rentals+ Housing)	Housing effect	Rental effect
20–24	-3.92	-2.67	-1.25
25–34	-4.47	-5.05	0.58
35–44	-3	-4.65	1.65
45–54	-2.55	-3.02	0.47
55–64	0.17	0.3	-0.13
65–74	4.31	2.58	1.73

Source: Author's calculations.

Figure 8a. Comparison of actual and potential internal migration rates for individuals between 20 and 24

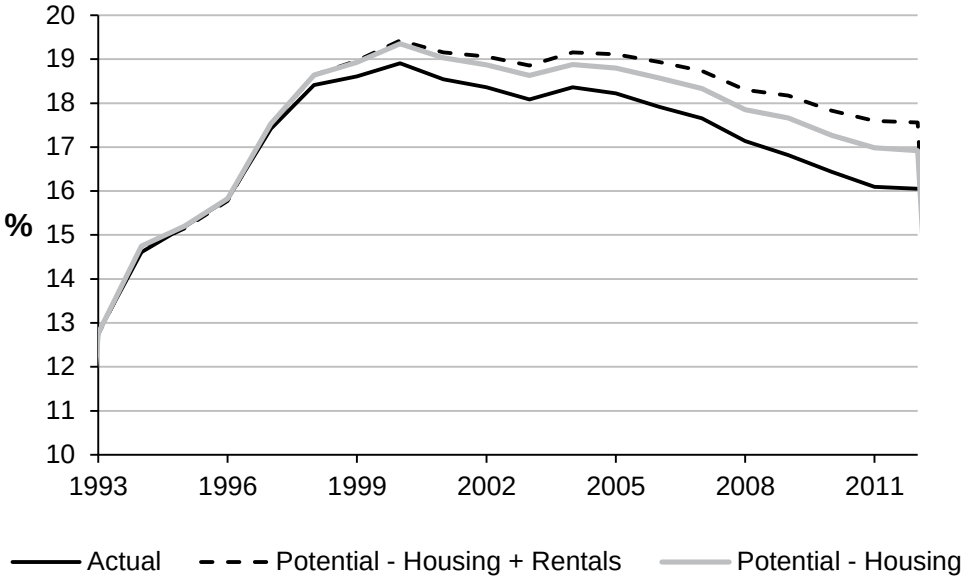


Figure 8b. Comparison of actual and potential internal migration rates for individuals between 25 and 34

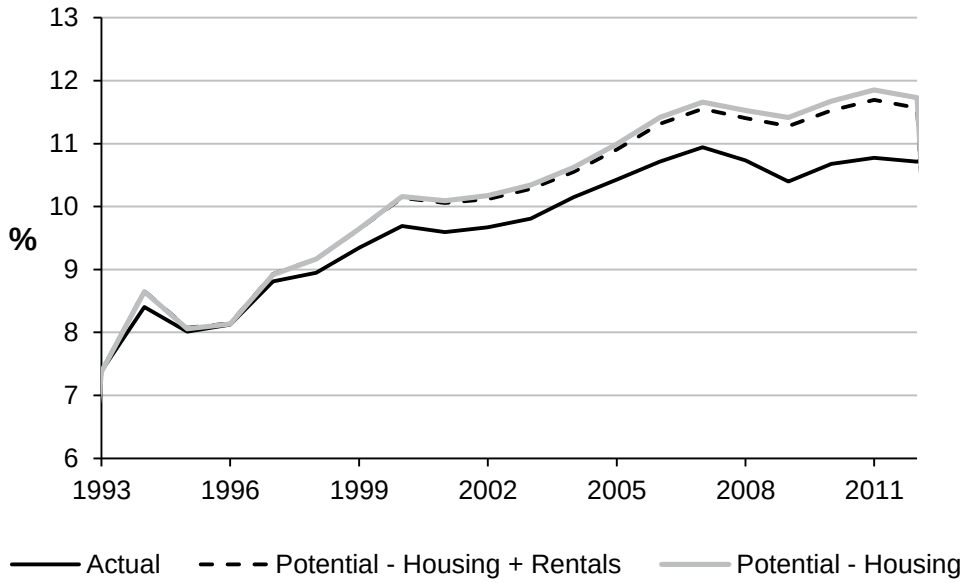


Figure 8c. Comparison of actual and potential internal migration rates for individuals between 35 and 44

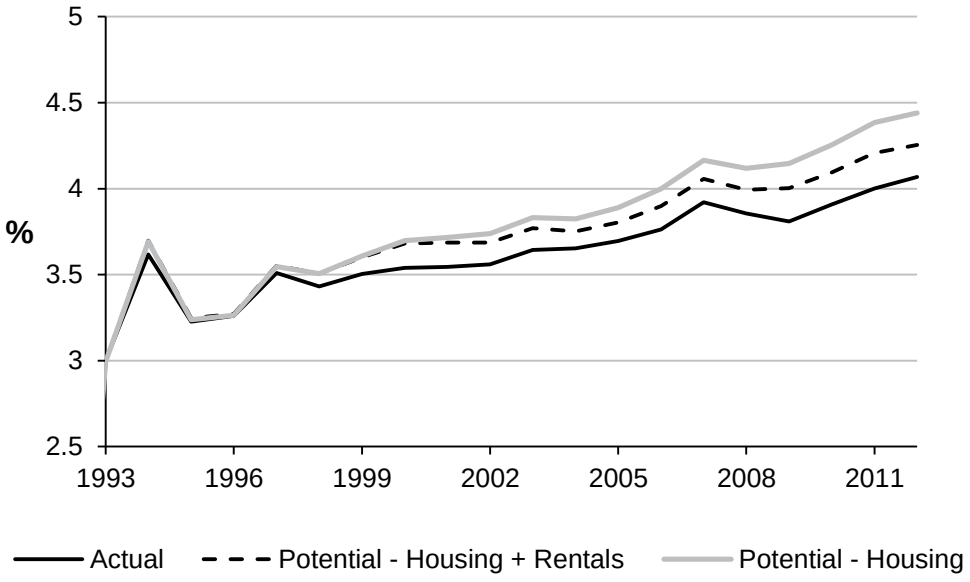


Figure 8d. Comparison of actual and potential internal migration rates for individuals between 45 and 54

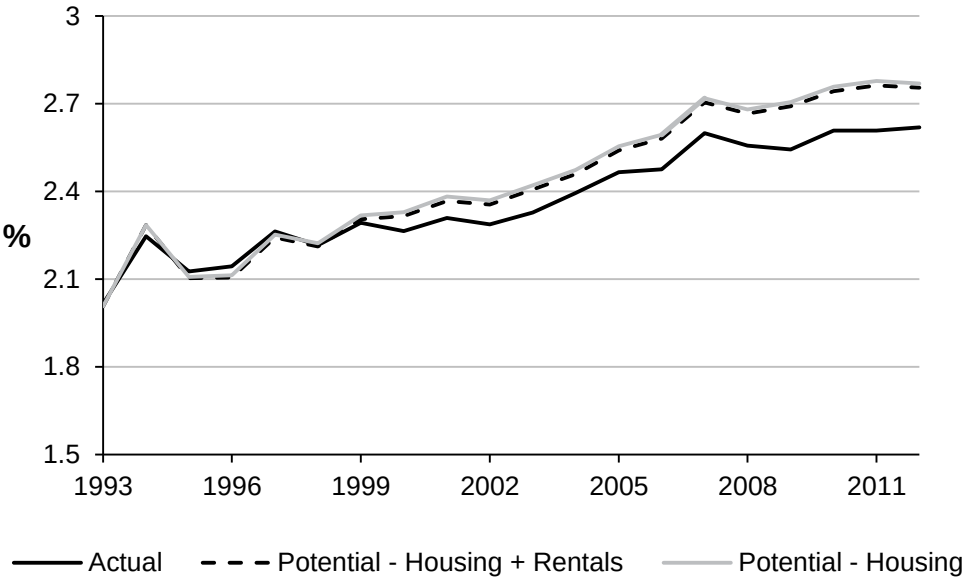


Figure 8e. Comparison of actual and potential internal migration rates for individuals between 55 and 64

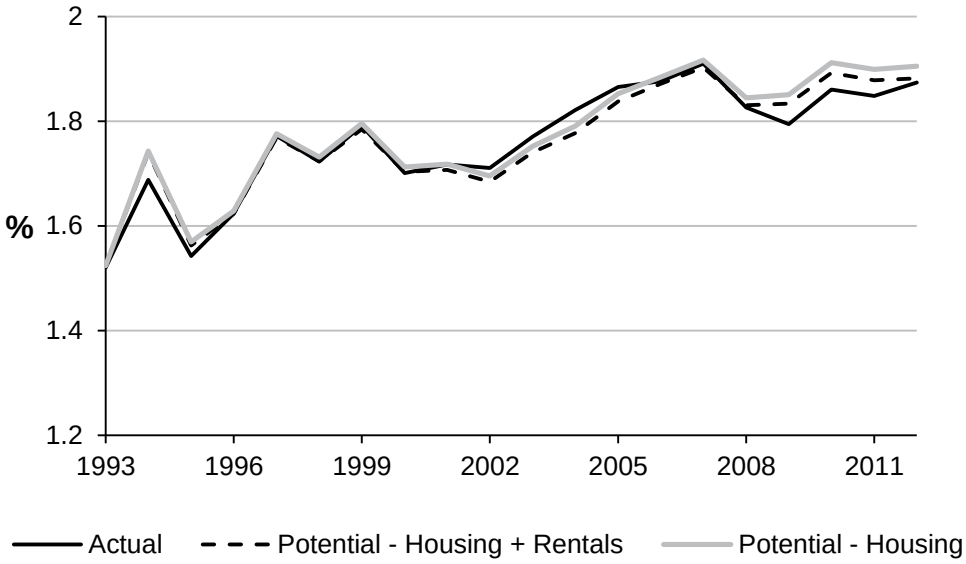
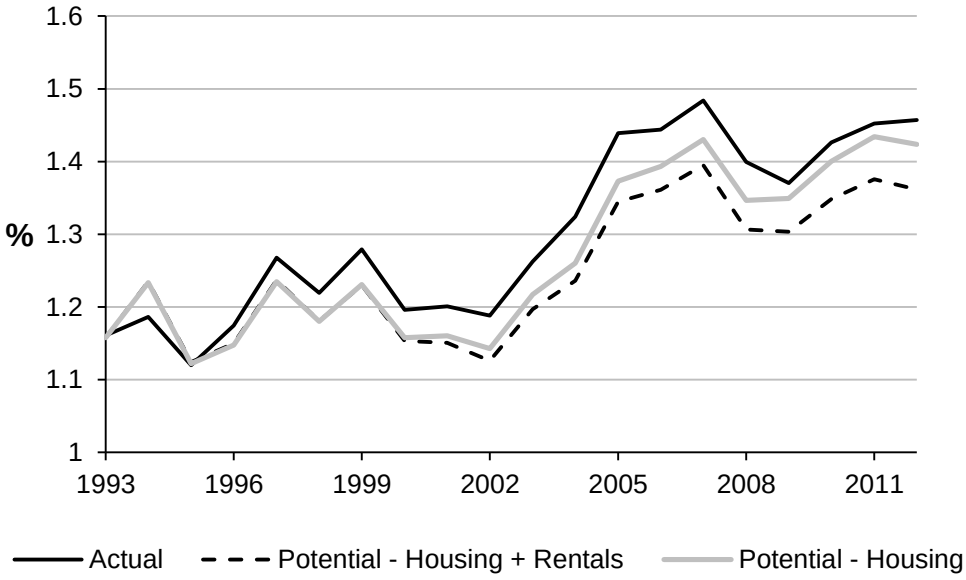


Figure 8f. Comparison of actual and potential internal migration rates for individuals between 65 and 74



There are three primary factors that drive the results in table 5 and figures 8a to 8f:

1. An increased housing per capita in the non-metropolitan regions has reduced out-migration for all individuals under 55 years of age (recall table 4: *OR_HOUSING* was not significant for individuals between 55 and 74) and increased in-migration for individuals of 25–44 and 65–

74 years of age. By contrast, in the metropolitan regions the opposite has occurred.

2. For individuals between 20 and 54 years of age, an increased stock of housing per capita in the non-metropolitan areas has reduced municipal out-migration more than it has increased in-migration. By contrast, for individuals between 55 and 74 years of age, out-migration is not affected by increased housing per capita at origin areas. Recall that the results indicated that the negative impact of the stock of existing dwellings at origin areas (*OR_HOUSING*) on intermunicipal migration is stronger than the corresponding positive effect of an increased stock of housing at destination areas (*HOUSING*) on intermunicipal migration, for all individuals between 20 and 54. Also, recall that *OR_HOUSING* was not statistically significant for individuals between 55 and 74 years of age.
3. Finally, among young adults of the 20–24 age cohort, in- and out-migration to/from the metropolitan regions is negatively affected by a decreased share of rentals, but among all other age cohorts it is positively affected (except for out-migration in the 55–64 cohort).

Table 5 shows that housing development since 1992 has affected intermunicipal migration negatively for all age cohorts except individuals over 55. Figures 8a–8f show that by 2000 the negative effects for individuals between 20 and 54, and the positive effects for the 65–74 cohort, had already begun to emerge. For individuals between 55 and 64 years of age, the positive effects are minor.

Starting with the "housing effect" and overlooking changes in tenure distribution, we find that housing per capita changes (among existing dwellings) have reduced intermunicipal migration for all age cohorts except individuals over 55. The negative effects are strongest for individuals between 25 and 44 years of age. Housing per capita changes since 1992 have reduced intermunicipal mobility for individuals between 25–34, 35–44, and 45–54 by 5.05, 4.65, and 3.02 percent each year, respectively.

However, when including changes in tenure distribution, we find that the total effect is strongest for the 25–34 age cohort, followed by the 20–24 cohort. In the metropolitan areas, the decreased share of rentals has reduced in-migration for individuals in the 20– 24 and 55–64 age cohorts, whereas mobility for all other age cohorts has increased. (This can be seen in table 5, as for all other age cohorts, the "total effect" is lower than the "housing effect"). Jointly, changes in housing per capita and the share

of rentals have reduced intermunicipal mobility for individuals between 25–34, 20–24, and 35–44 by 4.47, 3.92, and 3 percent, respectively.

In sum, the "housing effect" predominates over the effect of changes in the share of rented dwellings, but the latter effect is particularly important (and negative) for the 20–24 cohort. However, there are large regional variations as the share of rentals and housing per capita have decreased mainly in the metropolitan regions.

We now turn to the effect of the development since 1992 on municipal in- and out-migration for different regions. Tables 6 and 7 show the annual (average) estimated relative effects (%) of housing development since 1992 on intermunicipal migration (see, e.g., figure 5). Similarly to table 5, we separate the isolated effects of changes in housing per capita and the joint effect of changes in housing per capita and the share or rentals. Further, we also separate the effects on migration between regions and the effects on migration within regions.

Table 6. Estimated relative effects on intermunicipal migration (%) rates of changes in housing per capita and share of rentals after 1992: the metropolitan regions.

		1. Greater Stockholm		2. Greater Gothenburg		3. Greater Malmö	
Variable	Age Class	Total effect	Housing effect	Total effect	Housing effect	Total effect	Housing effect
Migration within region	20–24	-0.97	-0.05	-0.19	-0.03	-0.04	-0.03
In-migration from other regions	20–24	-12.09	-6.32	-6.62	-4.54	-5.55	-4.42
Out-migration to other regions	20–24	-3.64	0.26	-0.98	0.20	-0.24	0.45
Migration within region	25–34	0.12	-0.24	-0.11	-0.16	-0.21	-0.20
In-migration from other regions	25–34	-13.44	-13.93	-11.18	-12.12	-12.72	-13.66
Out-migration to other regions	25–34	4.24	0.80	0.89	0.35	0.61	0.75
Migration within region	35–44	0.45	-0.21	-0.02	-0.14	-0.18	-0.19
In-migration from other regions	35–44	-11.36	-19.59	-12.65	-15.67	-13.74	-15.45
Out-migration to other regions	35–44	5.68	1.40	3.03	1.12	2.98	1.86
Migration within region	45–54	-0.05	-0.08	-0.01	-0.02	-0.02	-0.05
In-migration from other regions	45–54	-10.36	-11.49	-8.12	-9.18	-8.06	-8.96
Out-migration to other regions	45–54	0.88	0.50	0.91	0.62	1.59	0.83
Migration within region	55–64	-0.30	-0.12	-0.06	-0.05	-0.07	-0.10
In-migration from other regions	55–64	7.14	-4.05	-2.20	-2.12	-5.23	-3.54
Out-migration to other regions	55–64	-3.84	0.52	0.19	0.40	2.13	0.56
Migration within region	65–74	0.21	-0.57	-0.21	-0.36	-0.53	-0.58
In-migration from other regions	65–74	5.55	-12.79	-6.03	-9.91	-13.01	-14.07
Out-migration to other regions	65–74	3.24	3.04	4.83	3.15	6.51	4.15

Table 7. Estimated relative effects of changes in housing per capita and share of rentals after 1992 on intermunicipal migration (%) rates: the non-metropolitan regions.

		4.University > 75,000		5.University < 75,000		6.Remaining > 25,000		7.Remaining < 25,000	
Variable	**Age Class**	**Total effect**	**Housing effect**	**Total effect**	**Housing effect**	**Total effect**	**Housing effect**	**Total effect**	**Housing effect**
Migration within region	20–24	0.14	-0.10	-0.77	-0.83	-3.00	-2.35	-9.24	-7.91
In-migration from other regions	20–24	-3.57	-3.19	-3.35	-2.86	-4.11	-3.18	-0.79	-0.08
Out-migration to other regions	20–24	-0.22	-0.09	-1.83	-1.26	-3.07	-1.96	-13.06	-10.28
Migration within region	25–34	-0.41	-0.21	-1.09	-1.14	-2.24	-2.73	-8.21	-9.21
In-migration from other regions	25–34	-6.64	-7.58	-4.07	-4.92	-3.48	-4.25	1.96	1.40
Out-migration to other regions	25–34	-0.40	-0.23	-3.29	-3.35	-4.92	-5.38	-25.93	-27.03
Migration within region	35–44	-0.90	-0.32	-1.05	-1.01	-0.76	-1.49	-3.51	-5.02
In-migration from other regions	35–44	-6.94	-7.67	-3.91	-4.89	-2.35	-3.53	3.22	2.31
Out-migration to other regions	35–44	0.15	-0.05	-2.41	-3.64	-2.56	-4.46	-19.05	-22.84
Migration within region	45–54	-0.20	-0.37	-0.69	-0.92	-1.20	-1.74	-4.52	-5.36
In-migration from other regions	45–54	-4.27	-4.94	-3.38	-4.10	-2.48	-3.01	0.56	0.32
Out-migration to other regions	45–54	-0.01	-0.12	-1.75	-2.17	-1.95	-2.50	-11.26	-12.42
Migration within region	55–64	0.31	-0.11	0.37	0.57	0.80	1.14	3.21	3.99
In-migration from other regions	55–64	-2.77	-0.25	-0.60	1.39	0.17	1.15	0.52	1.13
Out-migration to other regions	55–64	1.04	0.16	1.22	0.24	0.80	0.24	0.15	-0.99
Migration within region	65–74	-0.32	0.16	3.20	3.44	6.63	6.09	24.96	23.44
In-migration from other regions	65–74	-0.73	0.36	6.78	7.31	6.69	6.15	7.25	6.87
Out-migration to other regions	65–74	2.14	1.23	4.20	2.23	4.31	2.25	2.74	-2.21

Source table 6 and 7: Author's calculation. The "housing effect" refers to the difference between actual migration rates and potential migration rates (in %) if *HOUSING and OR_HOUSING* had remained at the level of 1992 and if annual levels of new construction had matched actual population growth each year. The "total effect" adds the critera that *RENTALS*, *OR_RENTALS*, *NEW_RENTALS* and *OR_NEW_RENTALS* must also remain at the level of 1992.

The same underlying factors as in table 5 explain the results in tables 6 and 7. Starting with the "housing effects", tables 6 and 7 show that negative effects on in-migration are strongest for the metropolitan regions and for individuals between 25 and 44 years of age. Housing per capita changes since 1992 have reduced in-migration to Greater Stockholm, Greater Gothenburg and Greater Malmö from municipalities in other regions, for individuals between 25 and 44, by 15–20 percent annually between 1993 and 2012. Reduced in-migration to the metropolitan areas has reduced out-migration from other areas and the negative effects are strongest for regions 6-7 ("remaining municipalities). For the university municipalities (regions 4-5), effects on out-migration are negative for all age cohorts except the 55–74 cohort. For the metropolitan regions, there are positive effects on out-migration for all age cohorts.

When accounting for changes in tenure distribution, the results confirm that the largest effects are in the metropolitan regions, which is where the portion of rented dwellings has changed the most (recall figure 6). For individuals between 20 and 24 years of age the negative effects on in-migration that follow from the reduced share of rented dwellings are strongest for Greater Stockholm, followed by Greater Gothenburg and Greater Malmö. (This can be seen as the "total effect" being more strongly negative than the "housing effect"). For Greater Stockholm, the "total effect" on in-migration is about twice as high as the "housing effect" for individuals between 20 and 24 years of age, indicating that changes in tenure distribution are as important as changes in the size of the physical stock of housing. Also, the negative effect on in-migration to non-metropolitan regions for the 20–24 cohort implies negative effects on out-migration from all regions. This is confirmed by the result, as the "total effect" on out-migration for the 20–24 cohort is more strongly negative than is the "housing effect" for all regions.

For individuals over 24, the reduced share of rentals has had positive effects on in-migration to the metropolitan regions (the "total effect" is more positive than the "housing effect"). For the non-metropolitan regions, the share of rentals changed little after 1992; consequently, its effects on in-migration are smaller than for the metropolitan areas (the "total effects" are close to the "housing effects).

5 Conclusions

The results in this paper support that the size of the existing stock of dwellings, new construction and tenure distribution are all important factors that influence internal migration in Sweden. The results indicate that a larger stock of existing dwellings significantly stimulates in-migration for individuals of 25–44 and 65–74 years of age, while it reduces out-migration for individuals between 20 and 54. Further, we found that the negative effect on out-migration that follows from an increase in the stock of housing per capita is stronger than the corresponding positive effect on in-migration. This suggests that development since 1992 has reduced intermunicipal migration rates, not only because of an increased lack of housing in areas with positive net migration rates, but also because of an increased housing per capita in areas with negative net migration.

We also found that new construction stimulates in-migration for all age cohorts. Although new dwellings are unaffordable for some, they always offer at least one new vacancy which allows the formation of new households and they initiate vacancy that can liberate dwellings that are affordable for households at the lower end of the income spectrum. Jointly, these results underline the necessity of new construction to keep vacancy chains active so that new housing needs can be met. However, although new construction was positively correlated with municipal in-migration for all age cohorts, the correlation was not strong for young adults (20–24 age cohort) relative to their mobility rates. This indicates a need for more variation in new construction in order to satisfy different needs, which may warrant housing policy interventions that are aimed at households with low incomes. Indeed, our results suggest that intermunicipal mobility of young adults between 20 and 34 years of age is more negatively affected than is that of other age cohorts by housing development since 1992. These results are consistent with previous reports that indicate that housing has recently become less accessible for some groups in Sweden.

Further, the results suggest that increasing the share of rentals in total housing stimulates intermunicipal mobility for young adults (20–24), whereas the effects are mainly negative for other age cohorts. There results reflect an overall strong preference for owned housing, and that young adults are overrepresented among rented dwellings. In that respect, the Swedish government may be right in prioritizing the construction of affordable rentals, particularly as the share of rentals has shrunk over the past two decades. And, the results in this paper indicates that the size of

the existing stock of housing, new construction, and tenure explain a significant proportion of intermunicipal mobility. For instance, the housing variables that we have analysed in this paper appear to be able to explain about half of the decline of intermunicipal mobility for individuals of 20–24 years of age after 1999 (recall figure 2a). However, the other half remains explained by other factors and public debate often focuses on new construction (affordable rentals in particular) as the ultimate solution. But many have also emphasized the role of capital gains taxation and Sweden's (strict) model of rent control. Future research on mobility in the Swedish housing market should look into these factors more deeply.

Finally, new studies that investigate the relationship between new construction and turnovers in the existing stock of dwellings are needed. For instance, earlier studies that analyse vacancy chains have become out-dated and are usually limited regarding geographical coverage. In this paper, we have attempted to augment previous research and have analysed the relationship between housing and internal migration from a broad geographical perspective. However, for reasons of data availability we did not look into factors that explain migration within municipalities. It would be interesting to model aggregated data on mobility within municipalities as a function of housing characteristics. After all, most movers do not migrate across municipal borders.

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6 Appendix

Table 9. Initial regressions results

	Dependent variable					
	MIG^{2024}	MIG^{2534}	MIG^{3544}	MIG^{4554}	MIG^{5564}	MIG^{6574}
SPATIAL_MIGRATION	0.32*** (0.089)	0.89*** (0.086)	0.33*** (0.023)	0.16*** (0.007)	0.078*** (0.01)	0.02384* (0.01)
TAX	-0.00919*** (0.00275)	-0.00059*** (0.0017)	-0.00012 (0.00011)	0.0000345 (0.000063)	-0.00009* (0.00005)	-0.00000040 (0.00000069)
HOUSING	-0.0022 (0.16)	0.05*** (0.0001)	0.02979 (0.00804)	-0.00658 (0.00475)	0.00496 (0.00541)	0.026640*** (0.003040)
RENTALS	0.0001*** (0.00009)	0.00083 (0.0006)	-0.0000783 (0.0000336)	-0.0000089 (0.0000156)	-0.0000497*** (0.0000135)	-0.00006280** (0.00002190)
NEW_CONSTRUCTION	0.29*** (0.09)	0.52*** (0.11)	0.17*** (0.05)	0.0952** (0.03733)	0.11440*** (0.02208)	0.123560*** (0.00020170)
RENTALS_NEW	0.0000065*** (0.0000029)	0.0000006 (00000017)	0.000000032 (0.00000096)	-0.00000159* (0.0000767)	-0.00020* (0.0000011)	-0.00000083 (0.00000087)
NAT_POP_GROWTH	0.0019** (0.00076)	0.0015*** (0.0003)	0.0001908 (0.0001714)	0.05762*** (0.017)	0.0003927 (0.0002280)	0.00001350* (0.00019870)
∆EMPLOMENT	0.00016*** (0.000039)	0.00008** (0.000035)	-0.0000426** (0.0000176)	-0.00000285 (0.0000129)	-0.0000034 (0.0000134)	-0.00000984 (0.00001190)
NET_INT_MIGRATION	-0.00071*** (0.0002)	-0.00002 (0.00016)	0.0000764 (0.0000535)	0.0000157 (0.0066)	-0.0001292** (0.0000617)	-0.00017610 (0.00009240)
UNI	-0.0021*** (0.00017)	0.00013 (0.00028)	-0.0001538*** (0.0000364)	-0.0002745 (-0.000245)	-0.0001188** (0.00005)	0.00004080 (0.00007220)
RZI	0.0000025 (0.00001)	-0.000011*** (0.0000035)	-0.00000301 (0.00000335)	-0.000000346 (0.0000019)	-0.000000023 (0.0000016)	0.00000513*** (0.00000133)
DEATHS	-0.0016 (0.0011)	0.00051*** (0.00071)	0.0009025** (0.0004269)	0.000526** (0.0002444)	0.0000162 (0.0002347)	0.00037770** (0.00017270)
∆ECPOT	0.00087*** (0.00019)	0.00048* (0.00026)	0.000165300 (0.000096800)	0.0000545 (0.00787)	0.000018 (0.0000214)	0.00001850 (0.00004750)
POP2034	-0.0005** (0.0002)	-0.00083*** (0.00015)	0.000308** (0.0001101)	0.00087 (0.00215)	0.0000457 (0.0000420)	0.00004650 (0.00006040)
EMPLOYMENT	-0.000266*** (0.00007)	-0.00016*** (0.000039)	-0.000042600** (0.000017600)	-0.0000517*** (0.0000165)	-0.0000527*** (0.000011)	-0.00004970*** (0.00000791)
OR_TAX	0.00085 (0.0005)	-0.0013*** (0.0004)	0.0000064 (0.0001360)	0.0000376 (0.0000778)	0.0001 (0.00011)	0.000059 (0.000098)
OR_HOUSING	-0.16** (0.06)	-0.17*** (0.03)	-0.0631400*** (0.0163300)	-0.02933*** (0.0036)	-0.0000558 (0.0000817)	0.00000987 (0.00003750)
OR_RENTALS	0.0006*** (0.0002)	-0.00034*** (0.000075)	-0.000167700*** (0.000029600)	-0.00000908 (0.0000151)	0.0000569** (0.0000230)	0.00004950* (0.00002580)
OR_NEW_CONSTRUCTION	*-0.047 (0.13)*	*0.0007*** (0.00085)*	*0.000413100 (0.000265400)*	*0.0424** (0.0165)*	*0.0003719 (0.0003164)*	*-0.00007160 (0.00016780)*
RENTALS_NEW	*-0.000014* (0.000008)*	*-0.00001 (0.000006)*	*-0.000167700*** (0.000029600)*	*-0.000164*** (0.0000442)*	*-0.0000014* (0.0000007)*	*-0.00000158* (0.00000081)*

	Dependent variable					
	MIG^{2024}	MIG^{2534}	MIG^{3544}	MIG^{4554}	MIG^{5564}	MIG^{6574}
OR_NAT_POP_GROWTH	-0.0022*** (0.00028)	0.00017 (0.0003)	0.000213700 (0.000161300)	-0.0001215 (0.0000891)	-0.0002263** (0.0001039)	0.00006300 (0.00008660)
OR_EMPLOYMENT	-0.0003*** (0.00015)	-0.000097 (0.0001)	0.000000573 (0.0000213)	-0.0000169 (0.00001150)	-0.0000163 (0.0000097)	-0.00001310 (0.00000919)
OR_ΔEMPLOYMENTt	0.00018*** (0.00008)	0.000026 (0.00008)	0.00000397 (0.00000397)	-0.0000107 (0.00000929)	-0.0000084 (0.0000105)	-0.00000763 (0.00000801)
OR_UNIage	0.0017*** (0.0005)	-0.0017*** (0.00018)	0.000028100 (0.000041000)	-0.0000233 (0.0000258)	0.0000301 (0.0000350)	0.00026860 (0.00023720)
OR_RZI	0.000007 (0.000024)	0.00005*** (0.000015)	0.000000286 (0.000003900)	0.00000151 (0.0000019)	-0.0000022 (0.0000018)	-0.00000055 (0.00000166)
OR_DEATHS	-0.00036 (0.0008)	-0.0026*** (0.00072)	-0.000860200*** (0.000180300)	0.000526** (0.0002444)	-0.0000540 (0.0001220)	0.00013020 (0.00011310)
OR_ NET_INT_MIGRATION	0.00014 (0.0004)	0.00035 (0.0002)	0.000684400*** (0.000087000)	0.0000993 (0.0000749)	0.0001152** (0.0000503)	0.00010470*** (0.00003540)
OR_ΔECPOT	-0.00067* (0.00067)	-0.0026*** (0.0007)	0.000049300 (0.000192900)	-0.0000698 (0.0000934)	-0.0001755 (0.0001237)	-0.00014680** (0.00005880)
OR_EMPLOYMENT	-0.00031* (0.00015)	0.000026 (0.000078)	0.000000573 (0.000021300)	-0.0000169 (0.0000115)	-0.0000163 (0.0000097)	-0.00001310 (0.00000919)
OR_POP2034	0.0039*** (0.0012)	0.0058*** (0.0005)	0.000578400*** (0.000068700)	0.0002158*** (0.000071)	0.0000635 (0.0000741)	0.00016440*** (0.00004940)
ORPOPage/POPage	0.000059*** (0.0000035)	0.0000011 (0.000025)	0.000002030 (0.000001590)	0.00000901 (0.00000274)	0.000009*** (0.00003)	0.00002360*** (0.00000521)
Constant						
No. of observations	**1,630,200**	**1,630,200**	**1,630,200**	**1,630,200**	**1,630,200**	**1,630,200**
No. of cross-sections	**81,510**	**81,510**	**81,510**	**81,510**	**81,510**	**81,510**
Adjusted R^2	**0.8666**	**0.921**	**0.878**	**0.814**	**0.733**	**0.586**

Table 10. Summary statistics for variables in the analysis.

Variable	Mean	St._dev.
MIG^{2024}	0.046	0.144
MIG^{2534}	0.038	0.116
MIG^{3544}	0.018	0.056
MIG^{4554}	0.012	0.041
MIG^{5564}	0.011	0.035
MIG^{6574}	0.007	0.028
HOUSING and OR_HOUSING	0.373	0.036
NEW_CONSTRUCTION and OR_NEW_CONSTRUCTION	0.0013	0.002
RENTALS and OR_RENTALS	20.826	8.354
RENTALS_NEW and OR_RENTALS_NEW	30.957	38.752
TAX and OR_TAX	31.156	0.596
DEATHS and OR_DEATHS	1.150	0.290
POP2034	16.527	3.056
EMPLOYMENT and OR_EMPLOYMENT	54.457	11.848
Δ*EMPLOYMENT and OR_*Δ*EMPLOYMENT*	-0.155	3.737
UNI	6.7	3.626
RZI and OR_RZI	110.22	38.21
NAT_POP_GROWTH	-.0135	0.428
Δ*ECPOT and OR_* Δ*ECPOT*	1.60	1.61
$ORPOP^{2024}/POP^{2024}$	3.83	3.40
$ORPOP^{2534}/POP^{2534}$	4.03	3.76
$ORPOP^{3544}/POP^{3544}$	3.33	3.05
$ORPOP^{4554}/POP^{4554}$	2.94	2.46
$ORPOP^{5564}/POP^{5564}$	2.56	2.04
$ORPOP^{6574}/POP^{6574}$	1.84	1.42
OR_UNI^{2024}	13.54	1.21
OR_UNI^{2534}	13.84	1.68
OR_UNI^{3544}	15.49	0.94
OR_UNI^{4554}	15.21	1.05
OR_UNI^{5564}	12.35	1.93
OR_UNI^{6574}	7.89	2.04
NET_INT_MIGRATION and OR_NET_INT_MIGRATION $_1$	0.35	0.50
SPATIAL_MIGRATION	0.015	0.15

Table 11. Classification of municipalities

Municipality	Region
Upplands-Väsby	Greater Stockholm
Vallentuna	Greater Stockholm
Österåker	Greater Stockholm
Värmdö	Greater Stockholm
Järfälla	Greater Stockholm
Ekerö	Greater Stockholm
Huddinge	Greater Stockholm
Botkyrka	Greater Stockholm
Salem	Greater Stockholm
Haninge	Greater Stockholm
Tyresö	Greater Stockholm
Upplands-Bro	Greater Stockholm
Täby	Greater Stockholm
Danderyd	Greater Stockholm
Sollentuna	Greater Stockholm
Stockholm	Greater Stockholm
Södertälje	Greater Stockholm
Nacka	Greater Stockholm
Sundbyberg	Greater Stockholm
Solna	Greater Stockholm
Lidingö	Greater Stockholm
Vaxholm	Greater Stockholm
Norrtälje	Greater Stockholm
Sigtuna	Greater Stockholm
Nynäshamn	Greater Stockholm
Kungsbacka	Greater Gothenburg
Härryda	Greater Gothenburg
Partille	Greater Gothenburg
Öckerö	Greater Gothenburg
Stenungsund	Greater Gothenburg
Tjörn	Greater Gothenburg
Ale	Greater Gothenburg
Lerum	Greater Gothenburg
Lilla Edet	Greater Gothenburg
Göteborg	Greater Gothenburg
Mölndal	Greater Gothenburg
Kungälv	Greater Gothenburg
Alingsås	Greater Gothenburg

Municipality	Region
Staffanstorp	Greater Malmö
Burlöv	Greater Malmö
Vellinge	Greater Malmö
Kävlinge	Greater Malmö
Lomma	Greater Malmö
Svedala	Greater Malmö
Skurup	Greater Malmö
Höör	Greater Malmö
Malmö	Greater Malmö
Lund	Greater Malmö
Eslöv	Greater Malmö
Trelleborg	Greater Malmö
Uppsala	University > 75,000
Eskilstuna	University > 75,000
Linköping	University > 75,000
Norrköping	University > 75,000
Jönköping	University > 75,000
Växjö	University > 75,000
Helsingborg	University > 75,000
Kristianstad	University > 75,000
Halmstad	University > 75,000
Borås	University > 75,000
Karlstad	University > 75,000
Örebro	University > 75,000
Västerås	University > 75,000
Gävle	University > 75,000
Sundsvall	University > 75,000
Umeå	University > 75,000
Luleå	University > 75,000
Kalmar	University < 75,000
Gotland	University < 75,000
Karlskrona	University < 75,000
Ronneby	University < 75,000
Varberg	University < 75,000
Uddevalla	University < 75,000
Vänersborg	University < 75,000
Trollhättan	University < 75,000
Skövde	University < 75,000
Hällefors	University < 75,000

Municipality	Region
Falun	University < 75,000
Borlänge	University < 75,000
Härnösand	University < 75,000
Örnsköldsvik	University < 75,000
Östersund	University < 75,000
Skellefteå	University < 75,000
Piteå	University < 75,000
Boden	University < 75,000
Enköping	Remaining > 25,000
Nyköping	Remaining > 25,000
Katrineholm	Remaining > 25,000
Strängnäs	Remaining > 25,000
Motala	Remaining > 25,000
Mjölby	Remaining > 25,000
Gislaved	Remaining > 25,000
Nässjö	Remaining > 25,000
Värnamo	Remaining > 25,000
Vetlanda	Remaining > 25,000
Ljungby	Remaining > 25,000
Oskarshamn	Remaining > 25,000
Västervik	Remaining > 25,000
Karlshamn	Remaining > 25,000
Landskrona	Remaining > 25,000
Ystad	Remaining > 25,000
Ängelholm	Remaining > 25,000
Hässleholm	Remaining > 25,000
Falkenberg	Remaining > 25,000
Mark	Remaining > 25,000
Lidköping	Remaining > 25,000
Falköping	Remaining > 25,000
Arvika	Remaining > 25,000
Karlskoga	Remaining > 25,000
Ludvika	Remaining > 25,000
Sandviken	Remaining > 25,000
Söderhamn	Remaining > 25,000
Bollnäs	Remaining > 25,000
Hudiksvall	Remaining > 25,000
Håbo	Remaining < 25,000
Älvkarleby	Remaining < 25,000

Municipality	Region
Heby	Remaining < 25,000
Tierp	Remaining < 25,000
Östhammar	Remaining < 25,000
Vingåker	Remaining < 25,000
Gnesta	Remaining < 25,000
Oxelösund	Remaining < 25,000
Flen	Remaining < 25,000
Trosa	Remaining < 25,000
Ödeshög	Remaining < 25,000
Ydre	Remaining < 25,000
Kinda	Remaining < 25,000
Boxholm	Remaining < 25,000
Åtvidaberg	Remaining < 25,000
Finspång	Remaining < 25,000
Valdemarsvik	Remaining < 25,000
Söderköping	Remaining < 25,000
Vadstena	Remaining < 25,000
Aneby	Remaining < 25,000
Gnosjö	Remaining < 25,000
Mullsjö	Remaining < 25,000
Habo	Remaining < 25,000
Vaggeryd	Remaining < 25,000
Sävsjö	Remaining < 25,000
Eksjö	Remaining < 25,000
Tranås	Remaining < 25,000
Uppvidinge	Remaining < 25,000
Lessebo	Remaining < 25,000
Tingsryd	Remaining < 25,000
Alvesta	Remaining < 25,000
Älmhult	Remaining < 25,000
Markaryd	Remaining < 25,000
Högsby	Remaining < 25,000
Torsås	Remaining < 25,000
Mörbylånga	Remaining < 25,000
Hultsfred	Remaining < 25,000
Mönsterås	Remaining < 25,000
Emmaboda	Remaining < 25,000
Nybro	Remaining < 25,000
Vimmerby	Remaining < 25,000

Municipality	Region
Borgholm	Remaining < 25,000
Olofström	Remaining < 25,000
Sölvesborg	Remaining < 25,000
Svalöv	Remaining < 25,000
Östra Göinge	Remaining < 25,000
Örkelljunga	Remaining < 25,000
Bjuv	Remaining < 25,000
Sjöbo	Remaining < 25,000
Hörby	Remaining < 25,000
Tomelilla	Remaining < 25,000
Bromölla	Remaining < 25,000
Osby	Remaining < 25,000
Perstorp	Remaining < 25,000
Klippan	Remaining < 25,000
Åstorp	Remaining < 25,000
Båstad	Remaining < 25,000
Höganäs	Remaining < 25,000
Simrishamn	Remaining < 25,000
Hylte	Remaining < 25,000
Laholm	Remaining < 25,000
Orust	Remaining < 25,000
Sotenäs	Remaining < 25,000
Munkedal	Remaining < 25,000
Tanum	Remaining < 25,000
Dals-Ed	Remaining < 25,000
Färgelanda	Remaining < 25,000
Vårgårda	Remaining < 25,000
Grästorp	Remaining < 25,000
Essunga	Remaining < 25,000
Karlsborg	Remaining < 25,000
Gullspång	Remaining < 25,000
Tranemo	Remaining < 25,000
Bengtsfors	Remaining < 25,000
Mellerud	Remaining < 25,000
Svenljunga	Remaining < 25,000
Herrljunga	Remaining < 25,000
Vara	Remaining < 25,000
Götene	Remaining < 25,000
Tibro	Remaining < 25,000

Municipality	Region
Töreboda	Remaining < 25,000
Lysekil	Remaining < 25,000
Strömstad	Remaining < 25,000
Ulricehamn	Remaining < 25,000
Åmål	Remaining < 25,000
Mariestad	Remaining < 25,000
Skara	Remaining < 25,000
Hjo	Remaining < 25,000
Tidaholm	Remaining < 25,000
Kil	Remaining < 25,000
Eda	Remaining < 25,000
Torsby	Remaining < 25,000
Storfors	Remaining < 25,000
Hammarö	Remaining < 25,000
Munkfors	Remaining < 25,000
Forshaga	Remaining < 25,000
Grums	Remaining < 25,000
Årjäng	Remaining < 25,000
Sunne	Remaining < 25,000
Kristinehamn	Remaining < 25,000
Filipstad	Remaining < 25,000
Hagfors	Remaining < 25,000
Säffle	Remaining < 25,000
Laxå	Remaining < 25,000
Hallsberg	Remaining < 25,000
Degerfors	Remaining < 25,000
Ljusnarsberg	Remaining < 25,000
Kumla	Remaining < 25,000
Askersund	Remaining < 25,000
Nora	Remaining < 25,000
Lindesberg	Remaining < 25,000
Skinnskatteberg	Remaining < 25,000
Surahammar	Remaining < 25,000
Kungsör	Remaining < 25,000
Hallstahammar	Remaining < 25,000
Norberg	Remaining < 25,000
Sala	Remaining < 25,000
Fagersta	Remaining < 25,000
Köping	Remaining < 25,000

Municipality	Region
Arboga	Remaining < 25,000
Vansbro	Remaining < 25,000
Malung	Remaining < 25,000
Gagnef	Remaining < 25,000
Leksand	Remaining < 25,000
Rättvik	Remaining < 25,000
Orsa	Remaining < 25,000
Älvdalen	Remaining < 25,000
Smedjebacken	Remaining < 25,000
Mora	Remaining < 25,000
Säter	Remaining < 25,000
Hedemora	Remaining < 25,000
Avesta	Remaining < 25,000
Ockelbo	Remaining < 25,000
Hofors	Remaining < 25,000
Ovanåker	Remaining < 25,000
Nordanstig	Remaining < 25,000
Ljusdal	Remaining < 25,000
Ånge	Remaining < 25,000
Timrå	Remaining < 25,000
Kramfors	Remaining < 25,000
Sollefteå	Remaining < 25,000
Ragunda	Remaining < 25,000
Bräcke	Remaining < 25,000
Krokom	Remaining < 25,000
Strömsund	Remaining < 25,000
Åre	Remaining < 25,000
Berg	Remaining < 25,000
Härjedalen	Remaining < 25,000
Nordmaling	Remaining < 25,000
Bjurholm	Remaining < 25,000
Vindeln	Remaining < 25,000
Robertsfors	Remaining < 25,000
Norsjö	Remaining < 25,000
Malå	Remaining < 25,000
Storuman	Remaining < 25,000
Sorsele	Remaining < 25,000
Dorotea	Remaining < 25,000
Vännäs	Remaining < 25,000

Municipality	Region
Vilhelmina	Remaining < 25,000
Åsele	Remaining < 25,000
Lycksele	Remaining < 25,000
Arvidsjaur	Remaining < 25,000
Arjeplog	Remaining < 25,000
Jokkmokk	Remaining < 25,000
Överkalix	Remaining < 25,000
Kalix	Remaining < 25,000
Övertorneå	Remaining < 25,000
Pajala	Remaining < 25,000
Gällivare	Remaining < 25,000
Älvsbyn	Remaining < 25,000
Haparanda	Remaining < 25,000

Note: We have merged the following municipalities: Borås + Bollebygd = Borås, Lekeberg+Örebro = Örebro, Knivsta+ Uppsala= Uppsala, and Nykvarn+Södertälje=Södertälje.

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