Joint Discussion Paper Series in Economics

by the Universities of

Aachen · Gießen · Göttingen
Kassel · Marburg · Siegen

ISSN 1867-3678

No. 13-2021

Isil Erol and Umut Unal

Internal Migration and House Prices in Australia

This paper can be downloaded from
http://www.uni-marburg.de/fb02/makro/forschung/magkspapers

Coordination: Bernd Hayo • Philipps-University Marburg
School of Business and Economics • Universitätsstraße 24, D-35032 Marburg
Tel: +49-6421-2823091, Fax: +49-6421-2823088, e-mail: hayo@wiwi.uni-marburg.de

Internal Migration and House Prices in Australia

Isil Erol
Associate Professor of Real Estate Finance and Investment
Henley Business School
Department of Real Estate & Planning
University of Reading
Whiteknights, Reading RG6 6UD United Kingdom
Tel: +44-(0)7464-089150
E-mail: i.erol@henley.reading.ac.uk
ORCID: orcid.org/0000-0001-8125-9118

Umut Unal
Associate Professor of Economics
Visiting Researcher
School of Business and Economics
Philipps-Universität Marburg
Universitätsstr. 24, D-35037, Marburg, Germany
Tel.: +49-(0)6421-2823719
Email: umut.uenal@wiwi.uni-marburg.de

Internal Migration and House Prices in Australia

Abstract

Australia is one of the most mobile countries in the world through internal migration, which is an overlooked part of population change. This study provides the first empirical evidence for the impact of internal migration inflow on house price changes across 237 statistical regions in Australia from 2014 to 2019. Employing a spatial correlation approach and constructing a novel instrumental variable that matches the shift-share instrument used in the immigration literature, the paper indicates that population mobility increases housing prices in migration-receiving regions. Internal migration that amounts to 1% of the initial local area population is associated with a 0.7% to 0.8% increase in house prices in the three most populated states of Australia. The results provide further suggestive evidence that migration inflow has a significant positive effect on house price changes in metropolitan areas of New South Wales and Victoria – i.e., Capital Cities of Sydney and Melbourne – rather than non-metropolitan regions.

JEL Classification: R12; R23; R31

Keywords: Internal migration; Housing prices; Australia; Instrumental variables

1. Introduction

Internal migration is a neglected component of population changes as researchers and policymakers generally focus on natural increase (the excess of births over deaths) and net overseas migration components of population growth or decline. Australia has the highest level of residential mobility through internal migration[1], which is still increasing at a modest rate, unlike other developed countries in Europe and the United States of America (USA) (Charles-Edwards et al., 2018). The Australian Bureau of Statistics (ABS) data show that internal migration has been a strong contributor to resident population growth in Australia over the past decades. Considerable research effort has been devoted toward understanding the impact of immigration on house prices in Australia (e.g., Moallemi and Melser, 2020), the United States of America (Saiz and Wachter, 2011; Saiz, 2007); the United Kingdom (Sa, 2014); Canada (Akbari and Aydede, 2012); Switzerland (Degen and Fischer, 2017); Spain (Gonzalez and Ortega, 2013); and New Zealand (Stillman and Mare, 2008; Coleman and Landon-Lane, 2007). Yet, only a few studies have examined the relationship between internal migration and house price changes (e.g., Howard and Liebersohn, 2019; Wang et al., 2017; Stillman and Mare, 2008). To our knowledge, no study has been conducted to investigate the impact of internal migration on house prices in Australia.

This paper studies the relationship between internal migration and house price changes in three most populated states of Australia – New South Wales, Victoria, and Queensland – which together accounted for 78% of 25.4 million total population and had 83% of the total value of residential dwellings in June 2019.[2] According to the ABS data, the total resident population in New South Wales, Victoria, and Queensland increased by 9.1%, from 18.1 million in 2014 to 19.8 million people in 2019. In the same time period, internal migration made up to 17.9% of population growth. Population growth through overseas migration might not be a useful factor for housing price growth in Australia as immigrants rarely buy a property and a vast majority rent for several years (Dowling, 2019). Population growth through births adds no supply to the market, and through deaths, may add some supply, but not a significant number. Hence, examining where the Australian residents choose to move, and settle is a better indicator of where housing price growth is to be expected. Using the ABS data by region, we study

[1] Bernard et al. (2017) showed that Australia exhibits the highest level of residential mobility among the sixteen countries (Australia, the USA and fourteen European countries) with an average of 5.1 moves per individual.
[2] On 30 June 2019 the total value of residential dwelling in Australia was $6,720 billion (as of March 2020 this figure was $7,237 billion). New South Wales, Victoria, and Queensland had 40%, 28%, and15% of residential dwelling stock value, respectively (ABS 6416.0, Table 6, Value of residential dwellings).

annual house price changes in the 2014-2019 period across 237 Statistical Areas Level 3 (SA3) which are geographical areas that generally have a population of between 30,000 and 130,000 people and are designed to provide a regional breakdown of Australia. The panel data comprise six years since house price data for small areas or across SA3 regions are available from 2014. Our data allow us to measure house price changes and the spatial concentration of migrants yearly instead of relying on discrete Census data, as is typically the case in the literature. Besides, working with SA3-level disaggregated data, rather than state-, metropolitan area- or city-level data is crucial for studying the local economic impact of internal migration. Internal migration is the primary channel through which the population adjusts to regional labour and housing market conditions (Vermeulen and van Ommeren, 2009; Greenwood and Hunt, 1984); therefore, we estimate the impact of migration inflow rate rather than population growth on house price changes with appropriate local area controls. A spatial correlation approach is employed in which the annual change in house prices in different geographic areas is regressed on the annual inflow of migrants in that same area along with appropriate controls. To address the potential endogeneity problem due to simultaneous causality between migration and house price changes we employ a new, manually constructed instrument that matches the shift-share instrument used in the immigration literature. Eventually, this paper adds a new narrative to the housing-migration relationship by exploring whether and to what extent, internal migration affects house prices across Australia, one of the most mobile countries in the world through internal migration. To date, only a limited number of studies have examined the impact of internal migration on house prices and/or rents in the USA (Howard and Liebersohn, 2019), China (Wang et al., 2017), and New Zealand (Stillman and Mare, 2008), and Sweden (Tyrcha, 2020). In this sense, our paper contributes to the relevant literature by providing new evidence from the Australian housing market.

The findings of this study show that there is a local economic impact of internal migration in Australian cities. Internal migration pushes up the demand for housing in migration-receiving areas and results in house price increases. The two-stage least squares (2SLS) regression analysis results suggest that new migrants that amount to 1% of the initial local area population are associated with point estimates of 0.7% to 0.8% increase in house prices. When we benchmark our results against the results reported by previous research, we see that housing markets in Australian cities behave similarly to those in China, New Zealand, and Sweden – i.e., the positive impact of internal migration on the housing prices ranges from 0.71% for Chinese cities (Wang et al., 2017), to 0.91% in Swedish cities (Tyrcha, 2020), and up to 0.81%-

1.31% in New Zealand (Stillman and Mare, 2008). We further investigate if the local house price effect of internal migration differs across metropolitan (the Greater Capital Cities) versus non-metropolitan (the Rest of States) statistical areas. Our results suggest that migration inflow has a significant positive effect on house price changes in metropolitan areas such as Sydney and Melbourne rather than non-metropolitan areas in Australia. Considering that house prices are an essential source of human capital accumulation and local/regional economic growth (Miller et al. 2011; Edward and Gyourko, 2005)[3], internal migration and its influence on house prices play a crucial role in local economic development, predominantly in the Greater Capital City Statistical Areas in Australia.

The rest of the paper is organized as follows. Section 2 reviews existing research on the impact of migration on house price changes in several countries. Section 3 provides a brief discussion on population mobility in Australia. Section 4 introduces the methodology, and section 5 presents the results of the paper. Section 6 concludes.

2. Literature Review

There is a considerable amount of research that has focused on the impacts of international migration on house prices and/or rents in various countries such as the USA (Saiz and Wachter, 2011; Saiz, 2007), the United Kingdom (Sa, 2014), Canada (Akbari and Aydede, 2012), Australia (Moallemi and Melser, 2020), Switzerland (Degen and Fischer, 2017), Spain (Gonzalez and Ortega, 2013), and New Zealand (Stillman and Mare, 2008; Coleman and Landon-Lane, 2007). These studies find different effects of immigration on housing prices depending on the level of geographic disaggregation used (Sa, 2014). Empirical evidence for the US (Saiz, 2007) has found positive estimates of immigration on both rents and prices when looking at broad regions.[4] A number of papers (Hatton and Tani, 2005; Saiz and Wachter, 2011; Accetturo et al., 2014; Sa, 2014) have in contrast estimated negative impacts of immigration on average house prices and/or rents, mainly when focusing on small local areas – i.e., neighbourhoods in metropolitan areas. The displacement of (wealthy) natives from these neighbourhoods is the main argument used to explain these negative findings.

[3]Whilst Edward and Gyourko (2005) showed that areas with low housing prices tend to exhibit human accumulation declines as well as regional economic declines, Miller et al. (2011) found that house price changes have significant effects on local gross metropolitan product in the USA.

[4] Stillman and Mare´ (2008), Degen and Fischer (2017), Akbari and Aydede (2012), and Kurschner (2017) provided positive impact estimates for New Zealand, Switzerland, Canada, and Germany, respectively. Tumen (2016) studied the impact of the Syrian refugee inflow on Turkish housing rents and found a positive effect on only high-quality units.

Regarding the existing literature on the relationship between internal migration and housing market dynamics, a considerable amount of research has been conducted on the importance of housing market conditions (house prices and/or housing supply) for internal migration dynamics – e.g., Zabel (2012), Molloy et al. (2011), Gabriel et al. (1992), for the US; Cameron et al. (2006) for the UK, Burnley et al. (2007) for Australia, Mulhern and Watson (2009) for Spain, Vermeulan and Van Ommeren (2009) for the Netherlands, and Cannari et al. (2000) for Italy. Only a handful of papers, including Howard and Liebersohn (2019), Wang et al. (2017), Stillman, and Mare (2008), and Tyrcha (2020) have investigated the impact of internal migration on house prices and/or rents. In common, these studies have found a positive effect of internal migration on housing prices and/or rents. In particular, Howard and Liebersohn (2019) examined the effect of internal migration on housing markets through the aggregate rent increase in all USA cities and found that changing migration demand explains 54% of the rent increase and 75% of the CPI rent increase in the USA from 2000 to 2018. The main explanation for the significant increase in housing rents is the increased demand to live in ex-ante housing-supply-inelastic cities. Wang et al. (2017) investigated how inter-regional migration and rural-urban migration affect urban housing prices in Chinese cities and found that a 1% increase in inter-regional migrants (rural-to-urban migration) resulted in 0.70% (0.34%) increase in housing prices when controlling other relevant factors. Stillman and Mare (2008) examined how population change in New Zealand, through international and internal migration flows, has affected rents and sales prices of both apartments and houses from 1996 to 2006. The study used data from five Censuses and revealed that increases in net internal migration flows are associated with higher house prices – i.e., a 1% increase in the New Zealand-born population is associated with a 0.81% to 1.31% increase in house prices. Increases in the immigrant population, in contrast, are negatively associated with house price changes as a 1% population increase from immigrants is associated with a 0.48% to 0.98% decrease in house prices. Finally, Tyrcha (2020) examined the impact of both internal migration and immigration on the housing market across 284 Swedish municipalities from 2000 to 2015. The study concluded that house prices in an area increase by 0.91% with an internal migration impact equal to 1% of the initial population of the same local area.

Existing research on the Australian experience of internal migration has mainly focused on the main characteristics of internal migrants, such as the age, gender, birthplace, labour force, and education; the determinants of migration flows (Bell and Hugo, 2000; Bell and Cooper, 1995; Jarvie, 1989; Rowland, 1979); and the relationship between international migration inflow and

internal outmigration within the context of global cities (Burnley et al., 2007; Ley, 2007; Burnley, 1996).

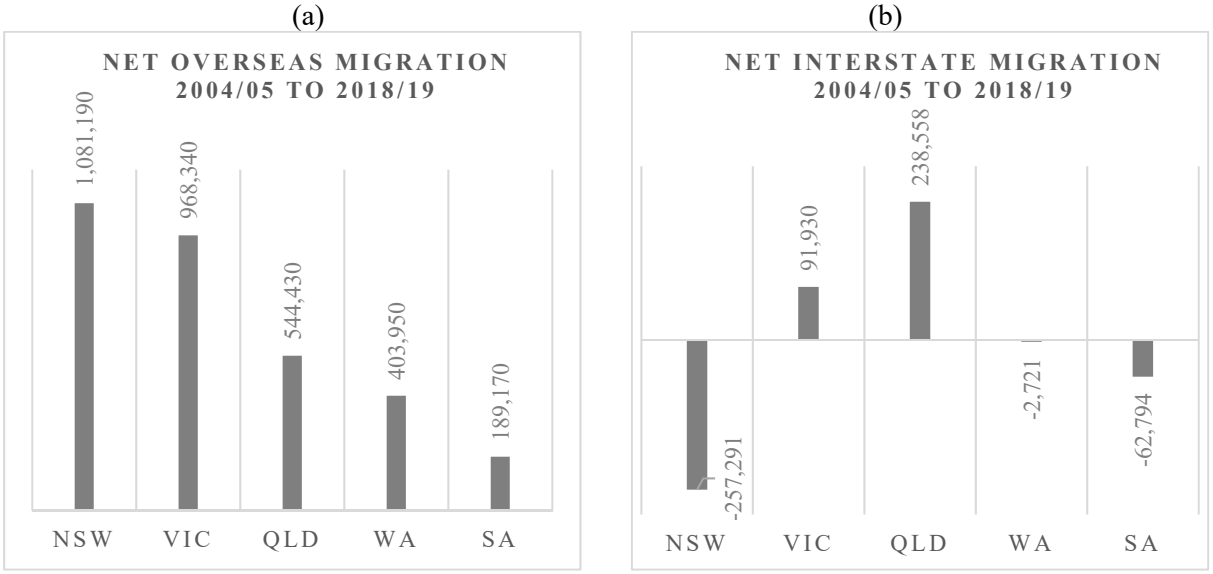
3. Population Mobility in Australia

Net overseas migration has been the main driver of Australia's population growth, adding up to 64% of the population increase in 2016–2017, whereas it represented only 33.4% of Australia's population growth in 1976–1977 (Simon-Davies, 2018). Internal migration, on the other hand, has been reshaping the geographical distribution of population in the country, leading to growth on the fringe of the major cities, as well as coastal centres, but also loss from parts of remote Australia (Charles-Edwards et al., 2018). According to the ABS, internal migration is the movement of people from one defined area to another within a country, and it is measured by interstate migration and regional internal migration. While the former is the net gain or loss of population through the movement of people from one state or territory of usual residence to another, the latter is the movement of people from one region to another within the country and includes both interstate and intra-state movements. Previous research has shown that Australia is among the most mobile societies in the world with 15% of the population changing their address within the country in the year before the 2016 Census, and 39% changing their address in the five years before the Census. Across the world, on average, 7.9% of people move domestically each year, while 21% move at least once every five years (Bell et al., 2015). Although a long-term decline in internal migration has been observed in a number of developed countries over recent decades, including the USA and Australia (Champion et al., 2017), the latest Census saw a moderate increase in Australian internal migration (Charles-Edwards et al., 2018).

Figure 1 exhibits population mobility during the 2005–2019 period in five leading states of Australia. In the last fifteen years, New South Wales had the largest number of overseas migrants (1,081,190 people), followed by Victoria (968,340 people), and Queensland (544,430 people). New South Wales had a strong countervailing population flow of net overseas migration and net interstate migration as the arrival of a large number of overseas immigrants to the state can be associated with offsetting departures of the resident population through interstate migration, especially from Sydney (Figure 1a-b). South Australia has also experienced a countervailing population flow of overseas and interstate migration by relatively small numbers compared to New South Wales. The state recorded the arrival of 189,170 net

overseas migrants and, at the same time, suffered a net loss of 62,794 interstate migrants. Queensland, in contrast, had a substantial gain in interstate migration (238,558 people) and received far fewer immigrants over the same period. Queensland state recorded the highest gain in interstate migration – i.e., annual average net interstate migration of 17,129 people from 2004 to 2019. Western Australia recorded a net gain of 403,950 overseas immigrants, but the state had a negative number of (-2,721) net interstate migration. Hence, the link between overseas migration and interstate migration within Australia's urban system varies widely across the states. New South Wales and South Australia have experienced offsetting migration flows as net interstate migration losses are seemingly associated with net overseas migration gains. Victoria and Queensland, in contrast, have attracted both overseas and interstate migration.

Figure 1: Net overseas migration and net interstate migration in five main states of Australia.



Source: ABS 34120 Migration, Australia

Apparently, at the state-level aggregate data, net interstate migration is equal to net regional internal migration as intra-state migration flows cancel out each other. In each state, every movement 'in' a region is matched by a movement 'out' from another region. However, the interstate and regional internal migration certainly differ at the disaggregated SA3 level. This paper uses regional internal migration flows across the SA3 areas to investigate how both interstate and intra-state migration flows affect housing prices in Australia.

4. Empirical Specification

The dominant methodology used in the empirical literature on migration impacts is the spatial correlation approach in which the change in house prices in different geographic areas is regressed on the inflow of migrants in that same area and appropriate controls (Saiz, 2007). In the absence of a well-identified exogenous shock to migration – i.e., ethnic German migrants who were exogenously allocated upon arrival to specific regions by government authorities (Glitz, 2012) or immigration shock after the Mariel boatlift in Miami (Saiz, 2003)[5] – there are four main problems in estimating the causal effect of migration on housing prices. The time-invariant unobserved heterogeneity or local area fixed-effects, simultaneous causality between migration and house prices, omitted variables, and house price adjustment to migration.

The first problem arises due to the fact that migration and house prices may be spatially correlated because of common fixed influences such as the climate or local amenities. To address this problem, in line with previous research by Sa (2014), Saiz and Watchter (2011), Saiz (2007), Coleman, and Landon-Lane (2007), our regression model is estimated with the dependent variable in first differences. This eliminates or differences out time-invariant, area-specific factors that affect migration flows and the level of house prices. As a further step, we include state-level area fixed effects because there might still exist some unobserved factors at the state-level correlated with changes in house prices and changes in migrant stocks. Without considering those, our estimation would be biased (Sanchis, 2017; Sa, 2014).

The second problem is the endogeneity issue that arises due to the simultaneous causality between migration flows and house price changes. The direction of causality is not clear because migrants are not randomly allocated across geographic areas – i.e., a self-selection endogeneity problem. The sign of bias is difficult to predict ex-ante. On the one hand, migrants may locate in more prosperous areas where house prices are growing faster. On the other hand, it is reasonable to expect that, controlling for economic conditions, migrants would choose to locate in areas where house prices are growing more slowly (Sa, 2014). To address the second problem, we use an instrument for the predicted recent distribution of the migrants based on the past spatial concentrations of migrants. The validity of this instrument relies on the underlying assumption that the past settlement pattern of migrants is uncorrelated with recent or current changes in the economic performance of geographic areas. In that case, lagged values

[5] Saiz (2003) examined the impact of an exogenous immigration shock after the Mariel boatlift on changes in rental prices in Miami. This exogenous immigration shock added an extra 9% to Miami's renter population in 1980.

of migrant inflows are correlated with changes in house prices only through their relations with the current flows of migrants (Sa, 2014). Another source of endogeneity problem may occur due to omitted variables that help to explain both growths in migration and house prices. For example, changes in job opportunities and/or wages in different regions affect both house prices and migration, and it is a problem of trying to identify the separate effect of migration flows from the effect of other factors. In this paper, we use lagged values of the local unemployment rate (Sa, 2014; Saiz, 2007) and also lagged changes in local wages (Howard and Liebersohn, 2019; Sanchis-Guarner, 2017) to capture omitted variables and establish causality between migration and house prices. The fourth problem concerns the length of time that it may take for migration to affect house prices; housing prices cannot adjust immediately. Following Saiz (2007), we estimate the change in house price from $t-1$ to t as a function of one-year lagged migration inflow at $t-1$ divided by total resident population at $t-2$. Using lags of the control variables, we accept that house prices do not adjust instantaneously to changes in fundamentals.[6]

The following model is used to estimate the effect of internal migration on house prices:

$$\Delta ln(HP_{i,t}) = \beta\left(\frac{Migrants_{i,t-1}}{Population_{i,t-2}}\right) + \alpha X_i + \delta Y_{i,t-1} + \rho \Delta Z_{i,t-1} + \emptyset_i + \Lambda_t + \Delta\varepsilon_{i,t} \qquad (1)$$

where $\Delta \ln(HP_{i,t})$ is the change in the log of the median house sales price in each SA3 area i between years $t-1$ and t. The main independent variable is the annual inflow of migrants in year $t-1$ divided by the initial population in year $t-2$ in a local area. Given the nature of housing markets, the main specification uses the migration inflow lagged one period with respect to changes in house prices. The coefficient β can be interpreted as the percentage change in house prices corresponding to an annual inflow of migrants equal to 1% of the initial local population (Sa, 2014). Following the literature, the independent variable of interest is the normalised migration flow as it is defined as the inflow of migrants into SA3 area i during a particular year divided by the local area's initial population. As highlighted by Sanchis-Guarner (2017), standardising migration flows by initial population stock deals with the fact that regions of different sizes have different population and house price dynamics (Card, 2001; Peri and Sparber, 2011; Wozniak and Murray, 2012), and it eliminates any unobservables that might

[6] We are aware of the fact that the way that housing markets adjust when houses differ in terms of their quality is essential. However, we do not have the appropriate data (e.g., the size and quality of dwellings) at the SA3 level to estimate models with different housing quality levels.

equally affect both the numerator (migration flow) and the denominator (original local population).

In Equation (1), X_i stands for initial local area attributes such as having a coastline and the land area. The log of SA3-level land area may capture supply factors related to land availability (Saiz, 2007). In order to isolate the impact of migration on house prices via its demand impact (e.g., keeping housing supply constant), one may also need to include time-varying changes in housing supply as an additional control variable (Sanchis-Guarner, 2017). This variable would remove the bias arising from the fact that immigrants might be locating in areas where construction is growing faster (to work in this sector or due to higher availability of homes) and that house construction also affects housing costs via the increasing supply of housing units. Therefore, in our model, we include both time-varying housing supply (dwellings approved or change in stock of dwelling divided by local population) following Sa (2014) and the time-invariant area attribute of the log of total land area to capture supply factors related to land availability (Saiz, 2007). $Y_{i,t-1}$ stands for one year lagged local area characteristics, which may affect house prices. It includes the local unemployment rate to control for local macroeconomic conditions and the housing demand. $\Delta Z_{i,t-1}$ stands for time-varying area characteristics – i.e., changes in local wages and changes in the number of jobs. The variables of the unemployment rate and local wages are well-known essential determinants of housing prices/rents (Saiz, 2007; Jud et al., 1996). Since the model is written in first-differences, time-invariant factors that are specific to each SA3 area and that affect the level of house prices have been differenced out. However, results will also be reported including state-level dummies (Φ_i) to capture different trends in house prices at the state level. Finally, Λ_t are year dummies, which capture national trends in inflation and other economic variables.

Instrumental Variable

Internal migrants tend to move to areas where other migrants settled before (Thomas, 2019). Empirical evidence on the internal migration dynamics has hinted at the importance of non-resident family members and/or friends as an attraction factor encouraging and directing migration towards locations where the family/friends live even as a motive for long-distance (e.g., inter-state) migration in addition to employment and education motives.[7] Relying on such evidence, an instrumental variable based on the settlement pattern of migrants in an earlier

[7] Cooke et al. (2016); Das et al. (2017); Silverstein and Giarrusso (2010); Pettersson and Malmberg (2009); Burnley et al. (2007).

period is constructed. More specifically, we use the settlement pattern of migrants in 2007 to predict the geographical distribution of migrants in the current period. Our identification strategy is based on the tendency of newly arriving migrants to settle in areas where previous migrants from the same area already settle in. We construct and use the following instrument for the inflow of migrants in SA3 region *i* as a share of the initial local population that matches the shift-share instrument used in the immigration literature.

$$\frac{\sum_r \gamma_{ri0}\, Migrants_{rt-1}}{Population_{it-2}} \tag{2}$$

where γ_{ri0} is the share of migrants depart from SA3 region *r* that live or settle in SA3 region *i* in the base year t_0. Indeed, γ_{ri0} gives the direction of migration, namely, flows from and to SA3-level geographical areas and provides a measure of the size of the network from region *r* in each region *i*. We take the year 2007 as the base year because regional internal migration estimates data at the SA3 level is available from 2007. $Migrants_{rt-1}$ is the total number of migrants that move out of region *r* in year *t-1*; therefore, the predicted inflow of migrants from region *r* in year *t-1* that choose to locate in region *i* is $\gamma_{ri0} \times Migrants_{rt-1}$. Summing across all SA3 regions of origin across the country, we obtain a measure of the predicted migration inflow in region *i* in year *t-1*. We consider 322 SA3 regions of origin across all states and territories of Australia. As the migrants' country of birth information is not available in our dataset (ABS Data by Region at the SA3 level), it is not possible to analyse the separate impact of native versus foreign-born residents' mobility on house prices.

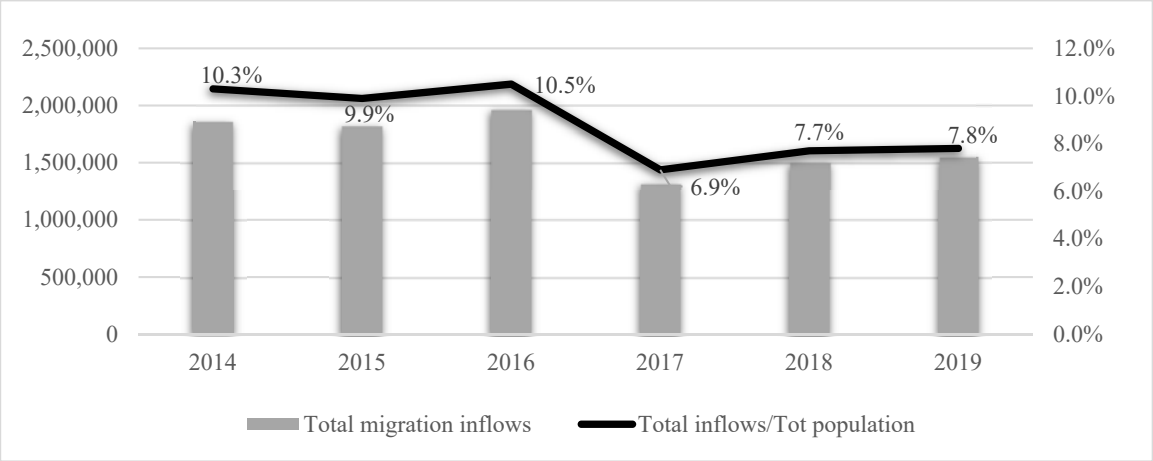
5. Results

5.1. Data and Descriptive analysis

This paper uses two main data sets published by the ABS: 1) Migration, Australia (cat. no. 3412.0), which includes estimates of internal migration down to statistical areas – i.e., local areas and sub-populations, and 2) Data by region (cat. no. 1410.0) that contains population, economy and industry, income, employment, and land data within regions across Australia, from 2013 to 2019. According to the ABS non-Census and Intercensal statistics, the SA3s are geographical areas that generally have a population of between 30,000 and 130,000 people and are designed to provide a regional breakdown of Australia. In the major cities, SA3s represent the area serviced by a major transport and commercial hub, whereas in regional areas SA3s

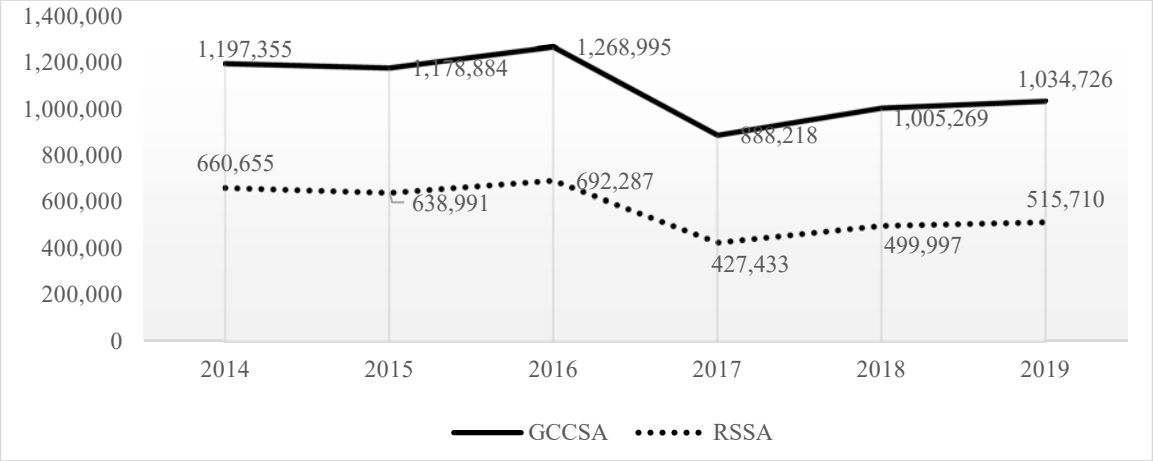
represent the area serviced by regional cities that have a population of over 20,000 people. In outer regional and remote areas, SA3s represent areas which are widely recognised as having a distinct identity and similar social and economic characteristics. SA3s are classified into two groups, the Greater Capital City Statistical Areas (GCCSA) and Rest of State Statistical Areas (RSSA). The GCCSAs are geographical areas designed to represent the functional extent of each of the eight State and Territory capital cities – i.e., Greater Sydney, Greater Melbourne and Greater Brisbane – and to reflect labour markets using the 2011 Census travel to work data. Within each State and Territory, the areas not defined as being part of the Greater Capital City are represented by a Rest of State regions such as Rest of New South Wales, Rest of Victoria and Rest of Queensland.

Figure 2a: The total migration inflows in New South Wales, Victoria and Queensland



Source: Calculated by authors.

Figure 2b: The total migration inflows in Greater Capital City Statistical Areas (GCCSA) and Rest of State Statistical Areas (RSSA)



Source: Calculated by authors.

We study the median house sale price changes across 237 SA3 areas in Australia and observe that housing prices increased by 31.9%, on average, in three states of New South Wales, Victoria, and Queensland during the 2014-2019 period. Whilst house prices in GCCSA increased by almost 38%, the average house price increase in RSSA was only 20.5%. Total migration inflows in three states are shown in Figure 2a. The share of migrants in total resident population decreased from 10.3%-10.5% in 2014-2016 to 7.7%-7.8% in 2018-2019. The lowest level of internal migration within three states was occurred in 2017, when migration inflows were 6.9% of the total resident population. Kalemba et al. (2020) studied the decline in internal migration levels in Australia and found that the strong impact of population ageing on the decline in internal migration has been fully counteracted by the positive effects of education and immigration. Furthermore, the behavioural effects are found to be the principal factor explaining this downward trend. Figure 2b exhibits total migration inflows in GCCSA and RSSA between 2014 and 2019. The annual average migration inflows were 1,095,575 people for the greater capital cities, and 572,512 people for the rest of states.

Table 1: Descriptive Statistics

Variables	Observations	Mean	Std. Dev.	Min	Max
Δlog Median House Sale Price	1122	0.041	0.079	-0.416	0.257
Migrants at t-1/Resident Population at t-2	1185	0.091	0.026	0.037	0.179
Number of Dwellings Approved at t-1/Population at t-1	1422	0.008	0.007	0.000	0.073
Unemployment Rate at t-1	1896	5.683	2.513	1.260	22.900
Δ Log Median Wage at t-1	948	0.024	0.015	-0.086	0.113
Δ Log Number of Jobs at t-1	948	0.015	0.031	-0.122	0.176
Log of Land Area	237	10.85	2.596	6.971	17.951
Coastal Dummy	237	0.245	0.431	0.000	1.000

Note: Δ represents first difference.

Table 1 provides further summary statistics for our dataset. House prices, on average, increased 4.1% per year across our sample during the period under consideration. There is a considerable variation behind this average – i.e., the most considerable reduction in house prices was recorded in Central Highlands and Outback-South in 2015 and 2016, respectively, where the house prices decreased more than 35%. On the other hand, the most significant increase was registered in 2017 in Loddon-Elmore, where house prices increased by more than 25%. Turning to our variable of interest, the SA3-level statistical area received an average annual inflow of 9.1% of its initial population. The largest increases were registered in Brisbane-inner and Ormeau-Oxford, wherein 2017 the inflow of migrants increases by 18%. In contrast, the lowest increase was in Broken Hill-Far West and Griffith - Murrumbidgee (West), which recorded a yearly inflow of migration equivalent to 4.1% and 3.6 of their initial population, respectively.

5.2. Regression Analysis

Table 2 presents the results of the first-differenced OLS specification in Equation (1) using data for 237 SA3 areas across three states of Australia. The dependent variable is the change in the log of the median house sale price, and the main independent variable is migration inflow relative to the total population in the previous year. The results show that internal migration is a significant explanatory variable for changes in house prices, having an estimated coefficient that ranges from 0.38 (model 2) to 0.64 (model 9) across nine different model specifications. In all specifications, the standard errors are clustered at the SA3 area level.

The first and the second columns of Table 2 display the results obtained when we only include the main independent variable without (model 1) and with (model 2) the state-level fixed effects and year dummies, respectively. The results indicate that house prices in a region increase by 0.38% (model 2) to 0.45% (model 1), with an internal migration impact equal to 1% of the same local area's initial population. In columns [3] to [6], we include different sets of controls, including the initial local area attributes (land area and coastal border), 1-year lagged values of local attributes (unemployment rate, and the number of dwellings approved per population), time-varying area characteristics (i.e., change in median wage and change in the number of jobs), state fixed effects and time effects. We find that the estimated value of β coefficient increases to 0.58 in model 5 that includes all local controls. Changes in local wage and the number of jobs, unemployment rate, and SA3's total land area seem to be robust correlates of house price growth in Table 2. In contrast, the evidence for the coastal dummy and the number of new dwellings per population are not that strong. It is important to note that the estimated coefficient for unemployment is positive but has taken a minimal, even a negligible value. The reason behind such an outcome is that the unemployment rates are reasonably low across Australia and our sample. However, it is clear from our findings that the wage coefficient is significant and has quite a high value, indicating that when purchasing a house, the main issue is salary rather than being employed.[8] Additionally, neither the exclusion of controls nor the inclusion of these variables does alter the results, and therefore our results in Table 2 are fairly robust across different specifications. However, we should note that these

[8] To provide a further robustness check, we also control for labour force participation rate and end up with similar results – a imperceptibly smaller coefficient –, which is available upon request.

Table 2: OLS Estimation Results for Internal Migration Inflows and House Price Changes

Variables	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	**[9]**
Migrants at t-1/Resident Population at t-2	**0.453*****	**0.382*****	**0.623*****	**0.619*****	**0.583*****	**0.631*****	**0.626*****	**0.486*****	**0.637*****
	[0.023]	[0.045]	[0.061]	[0.065]	[0.067]	[0.061]	[0.062]	[0.068]	**[0.070]**
Log of Land Area			**-0.004*****	**-0.008*****	**-0.008*****	**-0.007*****	**-0.006*****	**-0.005*****	**-0.007*****
			[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	**[0.001]**
Coastal Dummy			**0.008****	0.005	0.005	0.005	**0.009****	**0.008****	0.005
			[0.003]	[0.004]	[0.004]	[0.004]	[0.004]	[0.003]	[0.004]
Number of Dwellings Approved at t-1/Population at t-1			-0.467	0.013	-0.384	-0.466	-0.592	-0.568	-0.462
			[0.286]	[0.329]	[0.403]	[0.403]	[0.413]	[0.402]	[0.410]
Unemployment Rate at t-1			**0.002****	**0.002*****	**0.002*****				
			[0.001]	[0.001]	[0.001]				
Δ Log Median Wage at t-1				**1.110*****	**1.192*****	**1.178*****	**1.152*****	**1.179*****	**1.180*****
				[0.207]	[0.226]	[0.225]	[0.224]	[0.225]	**[0.224]**
Δ Log Number of Jobs at t-1					**0.341****	**0.350****	**0.360****	**0.333****	**0.349****
					[0.156]	[0.161]	[0.158]	[0.163]	**[0.164]**
Rest of States *[Migrants$_{t-1}$/Resident Population$_{t-2}$]							**-0.178*****		
							[0.044]		
Sydney-Melbourne *[Migrants$_{t-1}$/Resident Population$_{t-2}$]								**0.310*****	
								[0.064]	
Brisbane *[Migrants$_{t-1}$/Resident Population$_{t-2}$]									-0.01
									[0.051]
Observations	1,122	1,122	1,122	885	885	885	885	885	885
R-squared	0.43	0.4	0.23	0.62	0.61	0.61	0.61	0.6	0.61
Year Fixed Effects	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

Note: SA3-level clustered standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1, Δ indicates first difference.

coefficients cannot be interpreted as the causal impact of internal migration on house prices as the location selection decisions of migrants are not random.

Furthermore, in columns [7], [8], and [9], we provide the estimation results of original model 6 with three interaction variables to measure the simultaneous effect of the migration inflow ratio (the main independent variable) and the different types of SA3 regions – i.e., the Rest of State Statistical Areas, the Greater Capital Cities of Sydney and Melbourne, and finally the Greater Brisbane Capital City. This allows for a thorough consideration and understanding of metropolitan versus non-metropolitan region effects, and the analysis of whether the impacts of migration flow could differ across SA3 regions with different characteristics. The results of model 7 indicate that internal migration has a significant positive impact on house prices across New South Wales, Victoria, and Queensland – the β coefficient is 0.63 and is significant 1% level – whereas in the Rest of State SA3 areas, internal migration has a negative effect on house price changes. An increase in migration inflow equal to 1% of an SA3 region's initial population leads to an annual decrease of 0.18% in house prices. It appears that internal migration is influential in housing price increases in metropolitan areas (or capital cities) or rather than the Rest of State areas. We further investigate the joint effect of internal migration rate and Capital Cities of Sydney and Melbourne (model 8) and Capital City of Brisbane (model 9), separately, to understand in which cities migration inflow is the driving factor behind house price increases. We find that migration inflow in Sydney and Melbourne has a strong positive effect on house price changes – i.e., an increase in the migration inflow equal to 1% of a local SA3 area's initial population leads to a 0.31% increase in house prices. In contrast, in Brisbane an increase in migrant inflow equal to 1% of an SA3's initial population does not have any significant impact on house prices. These results provide evidence that internal migration has a significant positive effect on house price changes in capital cities, particularly in Sydney and Melbourne, rather than the Rest of States or non-metropolitan areas in Australia.[9]

To address the endogeneity problem due to simultaneous causality between migration flow and house price changes and to obtain consistent estimators, we confirm our results with two-stage least squares (2SLS) regression analysis or instrumental variables estimator. A suitable strategy to address the endogeneity issue is to use variation in migrant flows that is convincingly exogenous to the evolution of housing prices (Saiz, 2007). As defined in Equation (2), we

[9] We used alternative base years of 2008 and 2009 in the IV construction and ran our regressions accordingly as a further robustness check. Our results are insensitive to the exercise of selecting alternative base years and are available upon request.

construct and employ a novel instrument variable (IV) that captures the past spatial concentration of migrants. For the instrument to be valid, it must be correlated with the share of internal migration in the resident population, whereas uncorrelated with the local shocks that affect house price changes, subject to the controls, fixed area, and time effects. Table 3 presents regression results for migration inflow and annual house price changes using the instrument. In the first stage of the 2SLS regression, the dependent variable is the annual inflow of migrants in year $t-1$ divided by the initial population in year $t-2$ in a local area, whereas the main explanatory variable is the instrument. The estimated value for the first-stage coefficient is between 0.80 and 0.91[10] across models of interest and is significant at the 1% level. It is also supported by the first stage F test statistics, which consistently exceed 10 and above the Stock-Yogo critical values. The first two columns in Table 3 display the estimation results obtained when we only include the main independent variable without (model 1) and with (model 2) the state-level fixed effects and year dummies, respectively. The results suggest that house prices in a SA3 region increase by 0.41% (model 2) to 0.43% (model 1), with an internal migration impact equal to 1% of the same local area's initial population. In models 3, 4, 5, and 6 we include the local area controls, state-fixed effects and year effects. The estimated coefficient for the independent variable ranges from 0.72 (model 3) to 0.77 (model 4), indicating that an increase in migration inflow equal to 1% of an SA3 region's initial population leads to an annual increase of almost 0.7% to 0.8% in house prices. Across various specifications presented in Table 3, SA3's total land area, unemployment rate, changes in local median wage and the number of jobs, and also the number of new dwellings per resident population (except for model 4) seem to be robustly related to housing price growth. It is important to note that the results are insensitive to the exclusion of these controls.

These estimates are more positive than those obtained by OLS estimation of models 3 to 6 reported in Table 2, suggesting a negative (or downward) bias in the OLS results. Such an outcome suggests that conditional on the local controls and the state-level and year fixed effects, internal migrants tend to move towards SA3 regions, in which house prices are growing more slowly, or towards areas with more affordable housing stock.[11] We argue that the estimations with instruments better capture the relevant behaviour because, in all cases, our instrument is strong. Such findings suggest a strong correlation between the current and the

[10] The first-stage coefficients are also in line with the findings of Sa (2014) which estimated a first stage coefficient of 0.9.
[11] For a detailed discussion of IV estimators and their interpretation, please see Kennedy (2003).

Table 3: Internal Migration Inflows and House Price Changes with Instrument

Variables	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Migrants at t-1/ Resident Population at t-2	**0.429*****	**0.406*****	**0.721*****	**0.773*****	**0.735*****	**0.767*****	**0.731*****	**0.617*****	**0.806*****
	[0.022]	[0.048]	[0.066]	[0.103]	[0.111]	[0.102]	[0.102]	[0.106]	[0.127]
Log of Land Area			**-0.005*****	**-0.009*****	**-0.009*****	**-0.008*****	**-0.007*****	**-0.006*****	**-0.008*****
			[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Coastal Dummy			**0.007****	0.004	0.004	0.004	**0.008****	**0.007****	0.004
			[0.003]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Number of Dwellings Approved at t-1/ Population at t-1			**-0.752****	-0.41	**-0.773***	**-0.823***	**-0.869***	**-0.841***	**-0.811***
			[0.295]	[0.406]	[0.452]	[0.444]	[0.446]	[0.434]	[0.443]
Unemployment Rate at t-1			**0.001****	**0.002****	**0.002****				
			[0.001]	[0.001]	[0.001]				
Δ Log Median Wage at t-1				**1.039*****	**1.129*****	**1.124*****	**1.122*****	**1.142*****	**1.129*****
				[0.229]	[0.251]	[0.251]	[0.250]	[0.251]	[0.250]
Δ Log Number of Jobs at t-1					**0.320****	**0.329****	**0.345****	**0.319***	**0.321***
					[0.163]	[0.167]	[0.165]	[0.169]	[0.174]
Rest of States *[Migrants$_{t-1}$/Resident Population$_{t-2}$]							**-0.181*****		
							[0.043]		
Sydney-Melbourne *[Migrants$_{t-1}$/Resident Population$_{t-2}$]								**0.269*****	
								[0.064]	
Brisbane *Migrants$_{t-1}$/Resident Population$_{t-2}$]									-0.06
									[0.065]
First Stage IV Coefficient	1.119***	1.056***	0.816***	0.887***	0.882***	0.901***	0.911***	0.870***	0.855***
	[0.038]	[0.103]	[0.187]	[0.129]	[0.132]	[0.130]	[0.132]	[0.144]	[0.150]
First Stage F test	888.5	104.8	19.12	47	44.66	48.24	47.92	36.47	32.64
Observations	1,112	1,112	1,112	880	880	880	880	880	880
R-squared	0.24	0.41	0.43	0.61	0.61	0.61	0.62	0.62	0.61
Year Fixed Effects	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: SA3-level clustered standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1, Δ indicates first difference.

predicted geographic distributions of the migrants. The extended models in columns [7], [8], and [9] present IV estimation results with three interaction variables, where we disentangle the effects of migration on housing prices further by considering the differential impacts across different types of SA3 regions. The results suggest that house prices in Sydney and Melbourne increase by 0.27% following an increase in internal migration equal to 1% of the initial total population (model 8). Compared to OLS estimates, the coefficient value decreased slightly indicating a tendency for migrants to locate in more prosperous areas where house prices are growing faster in Sydney. Once again, we find that an increase in migrant inflow equal to 1% of an SA3's initial population does not have any significant impact on house prices in Brisbane (model 9). It is noteworthy that migration inflow has a negative impact on house price changes in the Rest of States; the estimated coefficient is -0.18 and significant at 1% level.

Our findings are in line with the previous research, which has shown that internal migration has a significant positive effect on house price changes in China, New Zealand, and Sweden. Overall, IV estimation results provide evidence that an increase in migration inflows equal to 1% of an SA3 region's initial population leads to an increase of 0.72% to 0.77% in house prices across our empirical model specifications. In June 2019, the median house sales price across 237 SA3 areas ranges from $360,000 to $1,117,500; therefore, an annual increase in migrants equal to 1% of an SA3 region's initial population leads to $2,772 to $8,605 annual increase in house prices with the beta estimate of 0.77%. It is possible to argue that housing prices across three states of Australia would have been around 0.7%-0.8% lower per annum had there has been no internal migration.

6. Conclusion

This paper shows that the internal mobility of the Australian population has a local economic impact because migration flow pushes up the demand for housing in destination areas and leads to an increase in house prices. Using disaggregated SA3-level data on annual internal migration flows and annual changes in house prices for 237 regions in Australia, we find that migration that amounts to 1% of the initial local area population is associated with a 0.7% to 0.8% increase in house prices across different empirical specifications. We also find that migration inflow delivers a significant positive effect on house prices in metropolitan areas such as Sydney and Melbourne rather than non-metropolitan areas in Australia.

Overall, the results provide valuable insights into the local housing markets and their role in sustainable economic development. Local economic development is, for the most part, achieved by attracting newcomers to the cities/towns and completed through the participation of migrants in local labour markets and their involvement in local housing markets. Given that house prices are an essential source of human capital accumulation and play an important role in fuelling the growth or decline of the economies, it could be argued that internal migration and its positive influence on local housing markets play a crucial role in fostering the local and regional economic development in Australia. New housing policies that aim to achieve a suitable housing supply both for the existing migrants (e.g., workers and professionals) and the potential migrants can significantly contribute to the success of local economic development. It is worth emphasizing that some regions within the coastal cities of the Gold Coast, the Sunshine Coast, and the Greater City of Brisbane in Queensland have attracted high numbers of internal migrants over the past years. A similar pattern has been observed in Victoria (Wyndham, Melbourne City, and Casey-South) and New South Wales (Sydney Inner City, Parramatta, and Campbelltown). The persistent interstate and intra-state migration to these areas need to be examined further – i.e., the main characteristics, motivations of migrants, and the related new housing policies – in order to achieve a sustainable population distribution and strengthen local economic development in Australia.

References:

Accetturo, A., Manaresi, F., Mocetti, S., & Olivieri, E. (2014). Don't Stand so close to me: the urban impact of immigration. *Regional Science and Urban Economics*, *45*, 45-56.

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

Bell, M., & Cooper, J. (1995). *Internal Migration in Australia 1986-1991: The Overseas-born*. Australian Government Publishing Service.

Bell, M., & Hugo, G. (2000). *Internal Migration in Australia: 1991-1996 Overview and the Overseas-born*. Department of Immigration and Multicultural Affairs.

Bell, M., Charles-Edwards, E., Ueffing, P., Stillwell, J., Kupiszewski, M., & Kupiszewska, D. (2015). Internal migration and development: Comparing migration intensities around the world. *Population and Development Review*, *41*(1), 33-58.

Bernard, A., Forder, P., Kendig, H., & Byles, J. (2017). Residential mobility in Australia and the United States: A retrospective study. *Australian Population Studies*, *1*(1), 41-54.

Burnley, I. H. (1996). Associations between overseas, intra-urban and internal migration dynamics in Sydney, 1976–91. *Journal of the Australian Population Association*, *13*(1), 47-66.

Burnley, I. H., Marshall, N., Murphy, P. A., & Hugo, G. J. (2007). Housing factors in welfare migration to and from metropolitan cities in Australia. *Urban Policy and Research*, *25*(3), 287-304.

Cameron, G., Muellbauer, J., & Murphy, A. (2006). Housing market dynamics and regional migration in Britain.

Cannari, L., Nucci, F., & Sestito, P. (2000). Geographic labour mobility and the cost of housing: evidence from Italy. *Applied Economics*, *32*(14), 1899-1906.

Card, D. (2001). Immigrant inflows, native outflows, and the local labor market impacts of higher immigration. *Journal of Labor Economics*, *19*(1), 22-64.

Champion, T., Cooke, T., & Shuttleworth, I. (Eds.). (2017). *Internal migration in the developed world: Are we becoming less mobile?* Routledge.

Charles-Edwards, E., Bell, M., Cooper, J, & Bernard, A. (2018). Population Shift: Understanding internal migration in Australia, 2071.0 Census of Population and Housing: Reflecting Australia – stories from the Census, 2016, Australian Bureau of Statistics.

Coleman, A., & Karagedikli, Ö. (2018). *Residential construction and population growth in New Zealand: 1996-2016* (No. DP2018/02). Reserve Bank of New Zealand.

Coleman, A., & Landon-Lane, J. (2007). *Housing markets and migration in New Zealand, 1962-2006* (No. DP2007/12). Reserve Bank of New Zealand.

Cooke, T. J., Mulder, C. H., & Thomas, M. (2016). Union dissolution and migration. *Demographic Research*, *34*, 741-760.

Das, M., de Valk, H., & Merz, E. M. (2017). Mothers' mobility after separation: Do grandmothers matter? *Population, Space and Place*, *23*(2), e2010.

Degen, K., & Fischer, A. M. (2017). Immigration and Swiss house prices. *Swiss Journal of Economics and Statistics*, *153*(1), 15-36.

Dowling, H. (30 July 2019). Market growth expected for regional Australia – Smart property investment: https://www.smartpropertyinvestment.com.au/buying/19875-market-growth-expected-for-regional-australia

Edward, L. G., & Gyourko, J. (2005). Urban decline and durable housing. *Journal of Political Economy*, 113, 345–375.

Gabriel, S. A., Shack-Marquez, J., & Wascher, W. L. (1992). Regional house-price dispersion and interregional migration. *Journal of Housing Economics*, *2*(3), 235-256.

Glitz, A. (2012). The labor market impact of immigration: A quasi-experiment exploiting immigrant location rules in Germany. *Journal of Labor Economics*, *30*(1), 175-213.

Gonzalez, L., & Ortega, F. (2013). Immigration and housing booms: Evidence from Spain. *Journal of Regional Science*, *53*(1), 37-59.

Greenwood, M. J. & Hunt, G. (1984). Migration and interregional employment redistribution in the United States. *American Economic Review*, 74(5), 957-969.

Hatton, T. J., & Tani, M. (2005). Immigration and inter-regional mobility in the UK, 1982–2000. *The Economic Journal*, *115*(507), F342-F358.

Howard, G., & Liebersohn, C. (2019, June). What Explains US House Prices? Regional Income Divergence. In *Proceedings of the Regional Income Divergence, 2019 Annual Meeting, St. Louis, MI, USA* (pp. 27-29).

Jarvie, W. K. (1989). Changes in internal migration in Australia: population or employment-led. *Regional Structure and Change, Experiences and Prospects in Two Mature Economies, Monograph Series*, (8), 47-60.

Jud, G. D., Benjamin, J. D., & Sirmans, G. S. (1996). What do we know about apartments and their markets? *The Journal of Real Estate Research*, *11*(3), 243-257.

Kalemba, S.V., Bernard, A., Charles-Edwards, E. and Corcoran, J. (2020). Decline in internal migration levels in Australia: Compositional or behavioural effect? Population, Space and Place,
https://doi.org/10.1002/psp.2341

Kennedy, P. (2003). *A Guide to Econometrics*. MIT press.

Kurschner, K. (2017, January). Immigration and Rental Prices of Residential Housing: Evidence from the Fall of the Berlin Wall. In *Conference paper*.

Ley, D. (2007). Countervailing immigration and domestic migration in gateway cities: Australian and Canadian variations on an American theme. *Economic Geography*, *83*(3), 231-254.

Miller, N., Peng, L. & Sklarz, M. (2011). House prices and economic growth, *Journal of Real Estate Finance and Economics*, 42(4), 522-541.

Moallemi, M., & Melser, D. (2020). The impact of immigration on housing prices in Australia, *Papers in Regional Science,* 99(3), 773-786.

Molloy, R., Smith, C. L., & Wozniak, A. (2011). Internal migration in the United States. *Journal of Economic Perspectives*, *25*(3), 173-96.

Mulhern, A., & Watson, J. G. (2009). Spanish internal migration: is there anything new to say? *Spatial Economic Analysis*, *4*(1), 103-120.

Peri, G., & Sparber, C. (2011). Assessing inherent model bias: An application to native displacement in response to immigration. *Journal of Urban Economics*, *69*(1), 82-91.

Pettersson, A., & Malmberg, G. (2009). Adult children and elderly parents as mobility attractions in Sweden. *Population, Space and Place*, *15*(4), 343-357.

Rowland, D. T. (1979). *Internal migration in Australia* (No. 1). Australian Bureau of Statistics.

Sá, F. (2014). Immigration and House Prices in the UK. *The Economic Journal*, *125*(587), 1393-1424.

Saiz, A. (2003). Room in the kitchen for the melting pot: Immigration and rental prices. *Review of Economics and Statistics*, *85*(3), 502-521.

Saiz, A. (2007). Immigration and housing rents in American cities. *Journal of Urban Economics*, *61*(2), 345-371.

Saiz, A., & Wachter, S. (2011). Immigration and the Neighborhood. *American Economic Journal: Economic Policy*, *3*(2), 169-88.

Sanchis-Guarner, R. (2017). Decomposing the impact of immigration on house prices. IEB Working Paper 2017/14.

Silverstein, M., & Giarrusso, R. (2010). Aging and family life: A decade review. *Journal of Marriage and Family*, *72*(5), 1039-1058.

Simon-Davies, J. (2018). *Population and migration statistics in Australia*. Department of Parliamentary Services, Parliamentary Library.

Stillman, S., & Maré, D. C. (2008). Housing markets and migration: Evidence from New Zealand. *Available at SSRN 1146724*.

Thomas, M. J. (2019). Employment, education, and family: Revealing the motives behind internal migration in Great Britain. *Population, Space and Place*, *25*(4), e2233.

Tumen, S. (2016). The economic impact of Syrian refugees on host countries: Quasi-experimental evidence from Turkey. *American Economic Review*, *106*(5), 456-60.

Tyrcha, A. (2020). *Migration and Housing Markets-Evidence from Sweden* (Doctoral dissertation, University of Cambridge).

Vermeulen, W., & Van Ommeren, J. (2009). Does land use planning shape regional economies? A simultaneous analysis of housing supply, internal migration and local employment growth in the Netherlands. *Journal of Housing Economics*, *18*(4), 294-310.

Wang, X. R., Hui, E. C. M., & Sun, J. X. (2017). Population migration, urbanization and housing prices: Evidence from the cities in China. *Habitat International*, *66*, 49-56.

Wozniak, A., & Murray, T. J. (2012). Timing is everything: Short-run population impacts of immigration in US cities. *Journal of Urban Economics*, *72*(1), 60-78.

Zabel, J. E. (2012). Migration, housing market, and labor market responses to employment shocks. *Journal of Urban Economics*, *72*(2-3), 267-284.