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IZA DP No. 11497

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ABSTRACT

Do House Prices Sink or Ride the Wave of Immigration?

The sharp rise in international migration is a pressing social and economic issue, as seen in the recent global trend towards nationalism. One major concern is the impact of immigration on housing. We assemble a comprehensive database of 474 estimates of immigration's impact on house prices in 14 destination countries and find that immigration increases house prices, on average. However, attitudes to immigrants moderate this effect. In countries less welcoming to immigrants, house price increases are more limited.

JEL Classification: F22, R31

Keywords: immigration, house prices, attitudes, meta-regression

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1. Introduction

The global stock of immigrants more than tripled between 1960 and 2015, from 72 million to 243 million, respectively (World Bank, 2018). Three percent of the world's population are now immigrants. The vast numbers involved have attracted researchers from numerous disciplines, including medicine, economics, and sociology (Abramitzky and Boustan, 2017; Hassan, 2017). Migration has become one of the most pressing social, economic and political issues, generating heated debates in countries facing large influxes of immigrants (Saiz and Wachter, 2011; Accetturo *et al*., 2014; Abramitzky and Boustan, 2017).

One particular focus of this debate is the impact of immigration on house prices. Some authors predict that immigration reduces house prices while others postulate the opposite situation (Sá, 2015; Mussa *et al.*, 2017). Immigration increases the demand for housing and rental accommodation, but it might also affect amenities and the perceived desirability of the neighborhoods involved (Accetturo *et al*., 2014). The social interactions between native and foreign born is particularly important (Saiz and Wachter, 2011; Accetturo *et al*., 2014; Sá, 2015).

Studies suggest immigration affects house prices depending on the level of geographical aggregation and area size. In small local housing markets, immigration may increase house prices directly by increasing demand. Alternatively, house prices may fall through indirect local resident out-migration, and the income effect that ensues (Saiz and Wachter, 2011; Sá, 2015; Mussa *et al.*, 2017); or house prices grow at a slower pace because the area is deemed to be less desirable. In larger areas, indirect effects are likely to be muted while direct demand effects may remain (Saiz, 2007).

The data suggest a positive correlation between the stock of immigrants and growth in house prices; see Figure. 1. Nevertheless, other factors, such as: employment, incomes, and

interest rates, can also impact house prices. Hence, empirical studies typically control for these covariates.

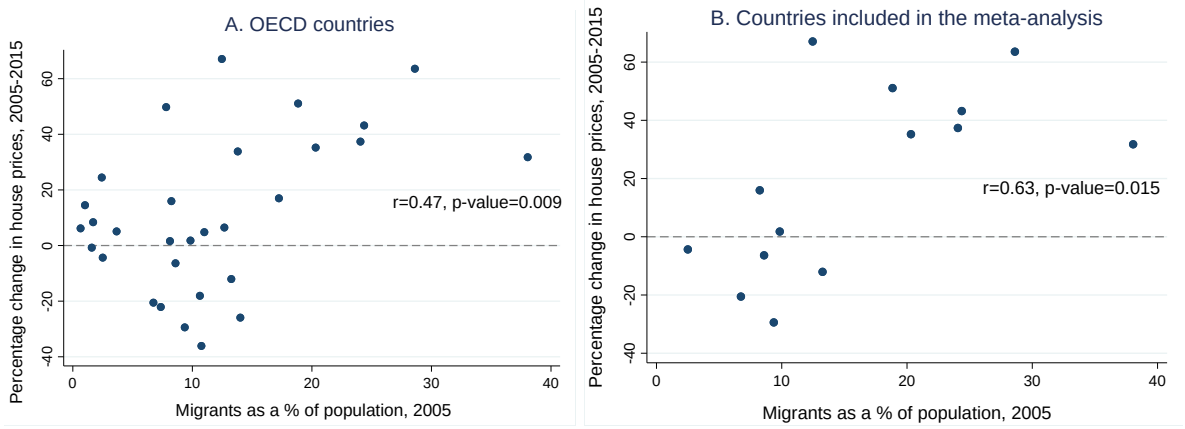

Fig. 1. Immigrants and house prices. The scatter diagrams show the correlation between immigrant share of population as of 2005 and the percentage change in house prices over the subsequent decade, 2005-2015. Immigration is lagged to circumvent potential reverse causality. Panel A covers most of the OECD countries. Panel B covers the same 14 countries covered in our meta-regression analysis.

In this article we present the findings from the first comprehensive meta-regression analysis to assess conflicting claims regarding immigration and house prices. Specifically, we investigate two related issues: (i) Does immigration impact house prices? (ii) Do the attitudes of local populations towards immigrants moderate this impact? While many individual studies have attempted to answer (i), ours is the first study to investigate (ii). Beliefs and attitudes play a critical role in virtually all market transactions and attitudes can be central to willingness to pay (Bowles, 1998; Frey, 1999). Consequently, we hypothesize that when locals in destination countries are more accepting of immigrants, the increased demand for housing from immigrants will increase house prices. Conversely, when locals are less welcoming of immigrants, we hypothesize that they will be less willing to pay for homes that are near immigrants and consequently house price increases will be modest. In other words, for locals, immigration may detract from living in an area reducing their willingness to pay for housing,

thereby reducing growth in local house prices. This is not necessarily driven by out-migration. Indeed, there can still be a net movement *into* a geographic area but people are not prepared to pay as much as other areas because of immigration. This leads to lower amenity values. This moderating role of local attitudes to immigrants has not been investigated by any of the primary studies; however, our meta-analysis shows that it is critical.

Housing is a universal human right (United Nations, 1948; UN General Assembly, 1966). Thus, our analysis is especially timely against the backdrop of a worldwide spread of populist and nationalist politics and the rising need to provide adequate housing for dislocated populations and affordable housing for younger generations.

2. Research Design

We apply meta-analysis and meta-regression methods to the existing research (Borenstein *et al.*, 2009; Stanley and Doucouliagos, 2012, 2015, 2017). Meta-regression can investigate the simultaneous impact of several covariates (or moderator variables) relating to differences in local attitudes, economic conditions, and research methods.

2.1 Data

A comprehensive search identified 45 econometric studies with 474 comparable estimates, spanning 14 developed countries: Australia, Belgium, Canada, Iceland, Israel, Italy, New Zealand, Singapore, Spain, Switzerland, South Africa, Sweden, the UK, and the USA. We use partial correlations as the effect size measure because many studies provide insufficient information from which to calculate other effect sizes such as elasticities. Partial correlations measure the impact of immigration on house prices holding other factors constant.

Search and selection criteria

The reporting of the meta-regression analysis adheres carefully to the guidelines set by Stanley *et al*. (2013).

The search for studies commenced with various search engines, include EconLit, Google Scholar, Scopus, ScienceDirect, and other databases in EBSCOhost, and the ABI/INFORM database. Search terms included various combinations of the following keywords: 'immigration', 'migration', 'house price', 'housing price', 'dwelling price', 'property value', 'rents', 'housing market', 'urban housing', and 'gateway'. A manual search was then undertaken of several academic journals in which studies on immigration and house prices have been published, e.g. *Regional Science and Urban Economics, Journal of Urban Economics, Economic Journal, American Economic Journal, Journal of Regional Science, Housing Studies, Applied Economics,* and *Canadian Journal of Economics.* We also searched the reference sections of all empirical studies and prior reviews. Finally, as we include both published and unpublished studies, we also contacted authors who had published in this area for any unpublished studies and for updated versions of working papers. The search for studies was ended in December 2017.

Studies were included in the meta-analysis if they met three criteria. First, a study had to report an estimate of the effect of immigration on house prices. Second, a study had to control for various other factors that impact on house prices. Third, a study had to report sample sizes and an outcome statistic, such as a *t*-statistic or a *p*-value that could be converted into a partial correlation. Partial correlations were calculated using the formula: $t/\sqrt{(t^2+df)}$, where *t* is the *t*-statistic and *df* is degrees of freedom. The standard error of the partial correlation is calculated as: $SE=\sqrt{(1-r^2)/df}$. The partial correlations were also converted into Fisher z-

transformation; the meta-analysis results are essentially identical and hence we report results using the untransformed values.[1]

The appendix presents a list of all studies along with a PRISMA diagram (PRISMA, 2017). Figure 2 presents the data in the form of a 'funnel plot', illustrating the wide heterogeneity in reported results.

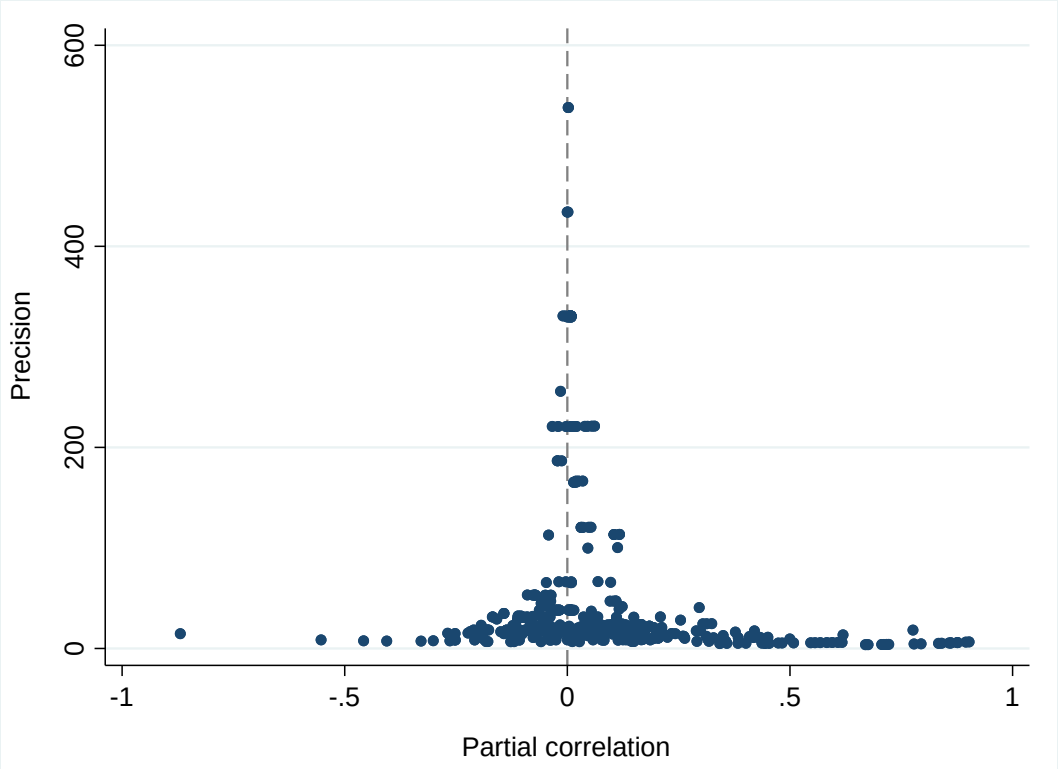

Figure 2: Funnel plot of partial correlations, immigration and house prices. Figure 2 reflects wide heterogeneity among reported results, nearly symmetrically distributed around zero.

[1] To reduce coding errors, all coding was independently checked by three of the authors.

All 45 studies in our review estimate some version of the following general model that purport to investigate the causal effect of immigration (M) on house prices (P), conditional on a vector of control variables, **z**:

$$P_{it} = \alpha_0 + \alpha_1 M_{it} + \alpha_z \mathbf{z}_{it} + \varepsilon_{it} \quad (1)$$

where i and t index the ith locality in time period t.

Table 1 reports several descriptive statistics: the percent of immigrants in the population, the total percentage change in house prices, the number of studies and estimates, and the unrestricted weighted least squares (WLS) weighted averages for all countries combined and for each country in our sample. Data on attitudes to immigrants are collected from the World Values Surveys (World Values Survey, various issues). We use the percent who respond "*Immigrants/foreign workers*" to the question: "*On this list are various groups of people. Could you please mention any that you would not like to have as neighbors?"* When all countries are combined, immigration has a near zero correlation. However, this overall average obscures significant heterogeneity not controlled for in Table 1.[2]

[2] House price data are sourced from the Bank of International Settlement (BIS) (2018). Column (2) of Table 1 reports the BIS percentage change in real house prices over 10 years to 2015q4. BIS data for Spanish house prices dates back to 2005q4. To maintain a consistent comparison of prices, it was decided to use house price growth over the decade to 2015q4 for all countries. Prices are deflated by the CPI (BIS, 2018).

Table 1: Country distribution of estimates and weighted average effect

Country	Immigrant stock % population 2015 (1)	House price % change decade to 2015 (2)	% of locals who would not like to live next to immigrants (3)	Number of studies [estimates] (4)	WLS weighted average (5)	95% CI (6)
Full sample	19.21	17.71	14.25	45 [474]	0.008	0.002; 0.015
USA	14.49	-23.52	13.60	7 [34]	-0.001	-0.010; 0.008
Spain	12.69	-30.62	7.50	6 [71]	0.111	0.024; 0.198
Canada	21.80	43.66	4.10	6 [65]	0.006	0.004; 0.007
UK	13.20	0.51	14.20	5 [109]	-0.042	-0.091; 0.006
Australia	28.22	37.35	10.50	5 [16]	0.018	0.008; 0.029
Switzerland	29.39	38.29	6.90	4 [68]	0.029	-0.013; 0.072
New Zealand	22.96	29.41	5.90	3 [60]	-0.076	-0.256; 0.105
All other	18.03	21.31	23.53	9 [46]	0.030	0.014; 0.047

Notes: Column (1) reports the stock of immigrants as a share of population as of 2015. Column (2) reports the total percentage change in real house prices over 10 years to 2015. Column (3) reports percent of locals who would not like to live next to immigrants. Column (4) reports the number of studies and number of estimates in square brackets. Column (5) reports the weighted least squares weighted average, with standard errors adjusted for clustering of estimates within studies. Column (6) reports 95% confidence intervals. All other includes Belgium, Iceland, Israel, Italy, Singapore, South Africa, and Sweden.

Sources: Column (1), World Bank (2012). Column (2), Bank of International Settlement (2018). Column (3), World Value Surveys, various issues.

2.2 Economic, attitudinal, and national differences

To model heterogeneity, we estimate the following meta-regression model:

$$r_{ij} = \beta_0 + \beta_x \mathbf{x}_{ij} + v_{ij} \quad (2)$$

where r_{ij} denotes the partial correlation between immigration and house prices, i and j index the ith estimate from the jth study, **x** is a vector of 13 moderator variables, and *v* are random errors. These moderators are: attitudes to immigrants, the standard error to accommodate potential publication and/or small-sample bias, the level of aggregation (nation and province, with city and municipality level the base), average year of the data, economic controls (income, the bank rate, rents, population, the stock of dwellings), and whether a study attempted to

address reverse causality using instrumental variable estimation (IV). The latter is particularly important as housing prices may influence, and be influenced by, immigration. Table 2 reports the descriptive statistics of the moderator variables used in the meta-regressions.

Table 2: Variable definitions and descriptive statistics

Variable	Description	Mean (Standard deviation)
Partial correlation	Correlation between house price increases and immigration, controlling for other factors that influence house prices	0.076 (0.223)
Standard error	Estimated standard error of the partial correlation	0.063 (0.051)
Attitude to immigrants	Proportion of survey *World Values Survey* respondents answering yes to not wanting immigrants/foreign workers as neighbors	9.174 (4.254)
Average year	Average year of sample used in primary study	-0.234 (6.794)
IV	Binary variable taking value of 1 if study controls for reverse causality.	0.283 (0.451)
Income	Binary variable taking value of 1 if study controls for income, employment, unemployment, or output.	0.610 (0.488)
Bank rate	Binary variable taking value of 1 if study controls for bank rate.	0.114 (0.318)
Rents	Binary variable taking value of 1 if study controls for rents.	0.032 (0.175)
Population	Binary variable taking value of 1 if study controls for population.	0.323 (0.468)
Stock	Binary variable taking value of 1 if study controls for the stock of dwellings.	0.238 (0.427)
Province	Binary variable taking value of 1 if study used provincial or state level data.	0.110 (0.313)
Nation	Binary variable taking value of 1 if study used national level data.	0.097 (0.296)

3. Results

The meta-regression results are presented in Table 3. Column (1) reports the baseline results. Four regional dummies are added in Column (2): Europe, Australasia, Africa, and Asia. The base is North America. These dummies capture any time invariant regional differences. Column (3) replaces the regional dummies with 12 country dummies, USA is the base. See the supplementary materials for further results, including treatment for impact of house prices on attitudes.

Table 3: Meta-regression estimates of the impact of immigration on house prices

	Baseline estimates	With regional dummies	With country dummies
	(1)	(2)	(3)
Constant	0.039	0.040	0.239
	(4.53)***	(2.98)***	(2.59)**
Standard error	0.139	0.278	1.202
	(0.29)	(0.57)	(2.99)***
Attitude to immigrants	-0.004	-0.004	-0.024
	(-3.43)***	(-2.94)***	(-2.59)**
Average year	0.001	0.001	0.001
	(1.81)*	(1.52)	(2.87)***
IV	0.026	0.026	0.011
	(2.06)**	(1.96)*	(1.20)
Income	0.032	0.028	0.033
	(2.26)**	(2.00)*	(2.05)**
Bank rate	0.098	0.074	0.024
	(0.74)	(0.58)	(0.23)
Rents	0.119	0.119	0.108
	(1.76)*	(1.90)*	(2.98)***
Population	-0.049	-0.045	-0.026
	(-3.01)***	(-2.32)**	(-1.84)*
Stock	-0.050	-0.050	-0.048
	(-2.73)***	(-2.78)***	(-3.04)***
Province	0.087	0.083	0.082
	(3.46)***	(3.21)***	(1.85)*
Nation	0.008	0.078	0.031
	(0.41)	(1.81)*	(0.29)
Regional dummies	NO	YES	NO
Country dummies	NO	NO	YES
Adjusted R^2	0.24	0.29	0.39
n (k)	40 (444)	40 (444)	40 (444)

Notes: Column (1) is the baseline results. Regional dummies are added in Column (2) and country dummies in Column (3). All models estimated using unrestricted weighted least squares, using inverse variance weights. n and k denote number of studies and number of estimates, respectively. The base in Columns (2) and (3) is North America and the USA, respectively. Brackets report *t*-statistics using standard errors adjusted for clustering of estimates within studies. 5 studies and 30 observations are lost due to missing observations for *Attitudes to immigrants*. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Column (3) is consistent with publication selection bias because the *Standard error* coefficient is statistically significant. *Attitudes to immigrants* has a robust negative coefficient, suggesting that a 10 percentage point drop in attitudes towards immigrants reduces the correlation between immigration and house prices by 0.24 which, in context, is a large effect. The effect of immigration on house prices is more pronounced at the state or provincial level

than at the city level. The specification of the empirical models is also important, especially controlling for income, rents, population, and the stock of housing.

Table 4: Estimated impact of immigration on house prices

	City level, country sample mean (1)	Province, country sample mean (2)	City level, full sample counterfactual (3)	Province, full sample counterfactual (4)
USA	0.072	0.154	0.237	0.319
	(2.00)*	(2.42)**	(3.40)***	(4.13)***
UK	-0.017	0.065	0.221	0.303
	(-0.36)	(0.91)	(2.22)**	(2.98)***
Canada	0.079	0.161	0.098	0.180
	(2.32)**	(2.53)**	(2.97)***	(2.93)***
Australia	0.042	0.124	0.096	0.178
	(0.38)	(0.91)	(0.87)	(1.31)
New Zealand	-0.065	0.017	0.005	0.087
	(-1.06)	(0.19)	(0.08)	(1.05)

Notes: Averages are calculated using the meta-regression coefficients from Table 3, Column (3). Brackets report *t*-statistics using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4 presents several weighted averages derived from the meta-regression model. These averages are presented for five countries, at the city and province (state) level. Evaluated at country sample means of *Attitudes to immigrants*, immigration leads to a small increase in house prices in the USA and Canada, but has no effect elsewhere. For all countries, the effect is more than twice as large at the province (state) level. We next carry out a counterfactual analysis, asking what would have happened if attitudes to immigrants softened to the sample minimum (the least negative view towards immigrants in the sample). These results are reported in Columns (3) and (4), showing that immigration would then increase housing prices in the USA, the UK, and Canada. This counterfactual analysis suggests that the non-significant

effect of immigration on housing prices observed in the UK may in part reflect negative attitudes towards immigrants.

3.1 Adjusting for attitudes influenced by house prices

One concern with the meta-regressions is that attitudes towards immigrants may be influenced by immigration, i.e. attitudes may be endogenous. For example, if attitudes are influenced by the impact of immigration on house prices, this may bias the weighted least squares parameter estimates. In the absence of suitable instruments for attitudes to immigrants, we re-estimate the meta-regression model using lagged values of attitudes. That is, instead of using the survey values that match the average year of data used in the primary samples, we use the survey values at the start of the study's sample period. For example, if a study uses data from 1999 to 2004, we use the survey value of attitudes in 1999 or earlier, depending upon the availability of data. This should reduce endogeneity bias as the initial survey value of attitudes is less likely to be influenced by the subsequent impact of immigration on house prices. Using initial values comes at a cost of losing 60 observations and 5 studies from the dataset. These new results are presented in Table 5 and confirm the importance of attitudes to immigrants. The key difference is that the coefficient on *Attitude to immigrants* is smaller, though it is still statistically and practically significant. The other difference is that the sign on *Average year* changes from positive to negative.

Table 5: Robustness checks, lagged attitudes and sample size weights

	With country dummies (1)	Attitudes at start of period (2)	Attitudes at start of period (3)	Sample size weights (4)
Constant	0.239	0.101	0.152	0.212
	(2.59)**	(1.96)*	(4.30)***	(2.38)**
Standard error	1.202	1.147	1.058	0.901
	(2.99)***	(2.28)**	(2.22)**	(2.51)**
Attitude to immigrants	-0.024	-0.011	-0.016	-0.021
	(-2.59)**	(-2.05)**	(-4.45)***	(-2.37)**
Average year	0.001	-0.003	-0.003	0.001
	(2.87)***	(-2.34)**	(-2.48)**	(2.66)**
IV	0.011	0.022	0.022	0.012
	(1.20)	(1.91)*	(2.14)**	(1.45)
Income	0.033	0.072	0.078	0.034
	(2.05)**	(4.65)***	(5.89)***	(2.03)**
Bank rate	0.024	0.057	0.065	0.038
	(0.23)	(0.47)	(0.51)	(0.56)
Rents	0.108	0.106	0.090	0.093
	(2.98)***	(2.06)**	(1.52)	(3.44)***
Population	-0.026	-0.064	-0.068	-0.027
	(-1.84)*	(-4.98)***	(-5.60)***	(-1.95)*
Stock	-0.048	-0.095	-0.101	-0.047
	(-3.04)***	(-3.93)***	(-5.36)***	(-2.97)***
Province	0.082	0.081	0.084	0.068
	(1.85)*	(1.78)*	(3.98)***	(2.02)*
Nation	0.031	0.000	0.100	0.065
	(0.29)	(0.08)	(2.31)**	(0.76)
Regional dummies	NO	NO	YES	NO
Country dummies	YES	YES	NO	YES
Adjusted R^2	0.39	0.48	0.46	0.37
n (k)	40 (444)	35 (374)	35 (374)	40 (444)

Notes: Column (1) reproduces the results from Table 2, Column (3). Columns (2) and (3) use the first available survey results for *Attitudes to immigrants*, i.e. lagged values of attitudes. All models estimated using unrestricted weighted least squares: Columns (1) to (3) use inverse variance weights and Column (4) uses sample size weights. n and k denote number of studies and number of estimates, respectively. The base is North America in Column (3) and the USA for all other columns. Brackets report *t*-statistics using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Our main results use inverse variance weights. However, because there is some correlation between the standard error of the partial correlation and the partial correlation, we test the robustness of the results to sample size weights. These results are presented in Column (4) of Table 5 and confirm the baseline results.

4. Conclusion

Immigration increases demand for accommodation and, all else being equal, likely manifests into higher house prices. However, the predictable impact of demand and supply on prices may be moderated by the attitudes and beliefs of market participants. We investigate the extent to which immigration impacts house prices in destination countries. Using data from the World Values Surveys, we also analyze the moderating impact of attitudes to immigrants on house price movements. We find that, on average, immigration increases house prices but this effect varies by region and over time. In countries where locals dislike living next to immigrants, for instance, immigration has a smaller effect on house prices, although we find no evidence that house prices sink as a result of immigration. In many countries, house prices have been unaffected by immigration.

In sum, our findings show that negative attitudes towards immigrants can offset the demand effect on housing prices from increased population. This is consistent with out-migration as a result of immigration, or a reduction in the amenity value of a locale, leading to reduced willingness to pay higher house prices. Our findings are also consistent with the literature that postulates people like living near their kin and this motive drives the selection process for housing destinations (Edin *et al.*, 2003; Saiz and Wachter, 2011). The tendency of new immigrants to live in the same areas as previous generations of immigrants, combined with a disinclination for local residents with negative attitudes towards immigration to reside near immigrants, attenuates the relationship between immigration and housing prices.

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Appendix

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PRISMA diagram for the meta-analysis