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Immigrant Language Barriers and House Prices*

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Abstract

Are language skills important in explaining the nexus between house prices and immigrant inflows? The language barrier hypothesis says immigrants from a non common language country value amenities more than immigrants from common language countries. In turn, immigrants from non common language countries are less price sensitive to house price changes than immigrants from a common language country. Tests of the language barrier hypothesis with Swiss house prices show that an immigration inflow from a non common language country equal to 1% of an area's population is coincident with an increase in prices for single-family homes of about 4.9%. Immigrant inflow from a common language country instead has no statistically significant impact.

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1. Introduction

Recent evidence from country studies on house prices shows that the impact of immigration on local house prices is a global phenomenon. Saiz (2007) estimates that an immigrant inflow equal to 1% of a city's population results in a 2% increase in house prices for U.S. cities. Gonzalez and Ortega (2009) show that the price effect through immigration is higher for the Spanish housing market. Akbari and Aydede (2009) also find immigration effects for the Canadian housing market, however their long-run estimates are muted compared to the short-run estimates for the United States and Spain.

One interpretation for the positive spatial correlations - the correlation between house prices and immigration across local markets - is the importance of local immigrant-specific amenities and networks. Saiz (2007) argues that immigrants are less sensitive to housing costs, because local immigrant-specific amenities and networks are more important to them. Until now, previous studies treat immigrant preferences for local amenities to be homogenous. In other words, British immigrants to the United States have the same demand for local amenities as do Mexican immigrants. This assumption is relaxed in this paper. It is argued that language barriers are an important determinant for the demand for local immigrant-specific amenities. The key

assumption is that non common language immigrants have a higher demand for immigrant-specific amenities than do common language immigrants.

The paper's objective is to show empirically that the strength of the spatial correlations between house prices and immigration is explained by the immigrant's home language. The language barrier hypothesis is that non common language immigrants are less price sensitive than common language immigrants. This hypothesis rests on the assumption that common language immigrants are less reliant on local immigrant-specific amenities compared to non common language immigrants. As a consequence, common language immigrants integrate quickly and behave similarly to natives. This means that the observed positive correlation between immigration flows and house prices in Saiz (2007) and Gonzalez and Ortega (2009) should be explained primarily by non common language immigrants.

The empirical analysis examines the behavior of Swiss house prices to European immigration flows for 85 districts between 2001 and 2006. Switzerland's three main languages (French, German, and Italian), which are common to several European countries, serves as a valid test case for the language hypothesis. Conditioning on a set of local variables, the results show that an immigration inflow from a non common language country equal to 1% of

an area's population is coincident with an increase in prices for single-family homes of about 4.9%. Immigrant inflow from a common language country instead has no impact.

The paper is organized as follows: Section 2 discusses the links between language and local amenities. Section 3 presents the empirical methodology. Section 4 discusses the data and descriptive statistics. Section 5 documents the empirical results. Section 6 concludes.

2. The role of language barriers

There is a large empirical literature that shows language barriers influence economic exchange in international trade and finance.[1] These diversity models emphasize the importance of communication and identify common language with elements of trust and cultural distance as determinants that facilitate economic transactions. Using a wide array of indictors, the diversity literature shows that the volume of cross-border transactions increases once communication frictions are reduced.

Language barriers are also an important factor influencing an immigrant's settlement choice where to reside in his newly adopted country.[2] For immi-

[1] See Guiso et al. (2009) and the many references therein.

[2] There are many related fields of discrimination that examines the linkages between

grants that do not share a common language with natives, communication is a barrier. As such, the local supply of simple services that are language oriented (i.e., foreign schools for kids, medical and financial services, haircuts, etc.) should weigh heavily in the non common language immigrant's decision for choosing a new home. Instead for common language immigrants, the demand for the same services and amenities is lower. They are able to use services that are oriented towards the native population. Hence, for the common language immigrants the demand for language-oriented services should not be location specific.

Similarly, common language narrows the cultural gap between natives and immigrants. In the case of Switzerland, its neighboring countries speak the same language and share many cultural characteristics. As a consequence, it is easier for common language immigrants to integrate themselves in social networks shared by natives. Instead for non common language immigrants, the cultural gap between them and natives is larger. This means the range of possible social networks available to them is more restrictive.

language proficiency and earnings, see for example Rivera-Batiz (1990) and Chiswick and Miller (1995). A related literature is ethnic enclaves and the economic success of immigrants, see Edin et al. (2003). However, each does not consider the link between immigrant language barriers and house prices.

A key assumption in the model by Saiz (2007) is that immigrants are less sensitive to changes in house prices than natives, because local immigrant-specific amenities and networks are more important for them. If this is the case, immigration inflows could spur net outflows of natives because of the increased housing costs that are associated with a housing demand shock. There is no way to separate the effect of increased housing demand (immigration) from the potential demand (native outflows). Saiz (2007) notes a positive effect of immigration on house prices, if natives are not infinitely sensitive to changes in housing costs and if they are not displaced one for one in the labor market.

The setup follows the model of Saiz (2007). The only difference is that I assume common language immigrants behave as natives and focus on the impact of a smaller subgroup of immigrants defined as non common language immigrants. This means that the immigrant effect arising from the demand for local-specific amenities was underestimated in previous studies by Saiz (2007) and Gonzalez and Ortega (2009).

3. Econometric specification

I estimate the impact of immigrant inflows on house prices at the district

level. The empirical baseline specification follows Saiz (2007)

$$\Delta p_{it} = \mu_t + \beta_k(\frac{\Delta I^k_{it}}{POP_{it-1}}) + \gamma_1 \Delta u_{it-1} + \gamma_2 X_i + \varepsilon_{it}, \quad (1)$$

where $\Delta p_{it} = ln(p_{it}/p_{it-1})$ denotes the annual change in house prices in district i at time t. The immigration effect is captured by $(\frac{\Delta I^k_{it}}{POP_{it-1}})$, the immigrant flow relative to the population at $t-1$ for district i. The analysis considers three variants of equation 1. Each uses a different measure of immigration, I^k, where $k = \{a = \text{all}, ncl = \text{non common language}, \text{and } cl = \text{common language}\}$. Changes in unemployed divided by population is denoted by Δu_{it-1}. Further, μ_t is a year fixed effect and X_i is a set of control variables, capturing region-specific characteristics. The shock to house prices in region i at time t is ε_{it}.

The specification in first differences assumes that regional fixed effects are filtered out. Still, I am interested in regional indicators that capture common information across local regions.[3] These five indicators are an index for district size (8 different categories), an index for district typology (14 different categories from agglomeration to rural), an index for district language (4

[3]The issue whether the contemporaneous deterioration of public services through increased population is adequately reflected in the regional indicators or house prices is an open issue. At best this means that the immigration impact effect is underestimated.

categories), a dummy for economic strength (+1 if receives fiscal transfers, 0 otherwise), and an index for social economic status (index from 0 to 100 based on education, job possibilities, income).

The coefficient of interest, β_k, is interpreted as the percentage change of house prices associated with annual inflows of immigrants equal to 1% of a district's population. Because of the annual frequency of the sample, β_k is interpreted as a short-run estimate in which the supply of housing does not respond immediately to immigration.[4] In other words, an increase in immigration into a district raises its local population and thereby the demand for housing. The increase in local demand raises prices and results in a positive β_k with the language hypothesis assuming that $\beta_{ncl} > \beta_a > \beta_{cl} > 0$. This positive effect of immigration on house prices defined by the language hypothesis also assumes that natives are not infinitely sensitive to changes in housing costs and that native displacement from the local housing market

[4]Gonzalez and Ortega (2009) and Saiz (2007) also work with annual data and interpret β as a short-run estimate capturing demand effects. Instead, the literature that relies on census data such as Greulich et al. (2004) and Ottaviano and Peri (2007) for the United States interpret the results at the decennial frequency as long-run estimates. The latter interpretation assumes that housing supply varies in response to immigration, while the former interpretation does not.

is not complete.

An empirical shortcoming of the baseline equation (1) is that it does not include a measure of household income for the full sample estimates. This limitation is due to data availability.[5] The absence of Swiss income means that the estimates for β_k in equation (1) are subject to an omitted variables bias. In other words, OLS estimates overstate potentially the immigration effect. For a restricted sample with household income at the district level, I show that the omitted variables bias linked to income does not influence the empirical results.

Potential measurement problems for the measure of immigrant flows raise concerns of the attenuation bias for the estimate of β_k, see Aydemir and Borjas (2011). Immigration flow is measured as the annual change in the number of foreign nationals residing in Switzerland. Because the immigration stock varies in response to naturalized citizens and births of foreign nationals, my measure of immigration flow is contaminated. This measurement problem drives the OLS estimate of β_k towards zero. Although at the national level

[5]Income data at the city level is available only for the cantons of Basel-City, Zurich, and Thurgau for the year 2000. It is therefore not possible to construct a measure for income changes at the district level for the full sample.

the difference between foreign nationals and foreign born population is small by international comparisons, it is difficult to determine how large the measurement problem is across regions.[6]

Establishing causality through an exogenous source of fluctuations in immigration inflows represents an additional concern for OLS estimation of β_k in equation (1). Immigration to a local area is likely to be an endogenous event. For example when controlling for local factors, immigrants may prefer areas where housing costs are increasing more slowly. This sensitivity to rising housing costs biases the OLS estimate of β_k towards zero.

To overcome problems of measurement error and of endogeneity linked to $(\frac{\Delta I_{it}^k}{POP_{it-1}})$, an instrumental variables (IV) strategy is used that is based on the settlement patterns of immigrants in previous periods.[7] This instru-

[6]Swiss record keeping of immigrants follows the "ius sanguinis" concept. In 2006, foreign nationals were 20.2% of the population, while foreign born were 22.9% of the population. See table 3 in Münz (2008) for European comparisons.

[7]As noted in Saiz (2007), the IV approach assumes that immigrants do not have information in picking winners, i.e., cities with high future growth rates. In the setup it is even more so unclear why language barriers improves the ability of non common language immigrants to pick growth areas over the common language immigrants. Further, the winner's story is less of an issue for a small country like Switzerland. The regional growth differences are not as large as in a big country such as the United States or Spain.

ment strategy has been used previously by Saiz (2007), Gonzalez and Ortega (2009), and Ottaviano and Peri (2007). The instrument is constructed such that it is independent from local contemporary demand factors, which possibly affect the settlement choices of immigrants. The instrument, referred as the "supply push component" by Card (2001), is constructed as follows:

$$SP_{it} = \sum_c \frac{\lambda_{ci}^{k,1997} \Delta I_{ct}^k}{POP_{it-1}}, \quad \text{with } \lambda_{ci}^{k,1997} = \frac{I_{ci}^{k,1997}}{I_c^{1997}}. \tag{2}$$

The share of immigrants from country c settling in district i in 1997 is denoted by $\lambda_{ci}^{k,1997}$.[8] The instrument is constructed with 11 countries of origin: Austria, France, Germany, Italy, the Netherlands, Portugal, Serbia, Spain, Turkey, the United Kingdom, and other.[9] The common language group is

Further, Switzerland is unique in that it has a good transportation system used by many commuters. Hence, unemployment or income tax statements at the district level are not necessarily a reflection of the district's growth prospects.

[8]Munshi (2003) shows that settlement patterns of previous immigrants determine location choices of arriving immigrants from the same country of origin.

[9]Immigration in Switzerland is a European phenomena. Unlike other European countries, such as the United Kingdom or Spain that received many immigrants from other continents, 95% of Switzerland's immigrants are from Europe. Further in the setup, I do not treat the Swiss linguistic areas as separate countries. For example, for the non common language immigrants there should be no clear preference for linguistic region, while for common language immigrants this should be the case.

Austria, France, Germany, and Italy. The remaining seven countries make up the the non common language group. The variable, $\Delta I^k_{ct} = I^k_{ct} - I^k_{ct-1}$, is the year-to-year change in the national level of immigrants from country c. By summing $\lambda^{k,1997}_{ci} \Delta I^k_{ct}$ over origin countries, I hope to obtain a predicted measure of total immigrant inflows in district i at time t that is orthogonal to local demand conditions. Finally, the instrument is normalized by the population in district i at $t-1$.

4. Data and descriptive statistics

This section is divided into two subsections. The first presents the house price data along with descriptive statistics. The second subsection discusses special features of the Swiss housing market.

4.1 Data

The annual sample is from 2001 to 2006. The hedonic adjusted prices are for single-family homes, multi-family homes, and condominiums, spanning 85 districts that have a residential population of at least 25,000 inhabitants in 2001.[10] Similar data for rents are unavailable at the district level.[11] The

[10]The term "district" refers to the 106 MS-Regionen, see Wüest and Partner (2004a) for further definitions.

[11]Because multi-family homes are rental units sold primarily for investment purposes,

average annual increase in house prices from 2001 to 2006 is 1.52% for single-family homes, 2.06% for multi-family homes, and 1.43% for condominiums (weighted by population over the 85 districts).[12] The examined areas encompass 96.38% of the Swiss residential population. Data on house prices are from Informations- und Ausbildungszentrum für Immobilien.

Data on the number of foreigners grouped by their country of origin are available at the city level. Between 2001 and 2006, Switzerland had a positive net migration rate of 2.9 per 1,000 inhabitants, consistent with the European average of 3.0 per 1,000 inhabitants, see Münz (2008). For the sample of 85 districts, the figure rises to 3.3. The immigration data are from the Federal Office for Migration. Further, data on the number of unemployed for each city are from the State Secretariat for Economic Affairs. Last, data on the total

this index best captures pressures in the rental market. Although there is no available data, it is believed that immigrants are primarily renters. Thus, it is expected that this index responds the strongest to non common language immigrants.

[12]The respective unweighted figures are 1.20% for single-family homes, 2.08% for multi-family homes, and 0.99% for condominiums, suggesting that home prices for larger districts grew slightly faster. The fact that new construction investment as a percentage of GDP stagnated at 6% throughout the sample is a further reflection of the moderate price growth for Swiss homes. Weak persistence is a further implication of the moderate house price inflation.

resident population and on the five socio-economic and regional indicators for each city are from the Federal Statistics Office. Information at the city level is aggregated to match the housing data at the district level.

Table 1 shows descriptive statistics for the two main variables in equation 1: immigrant-to-population ratio, $(\Delta I^k/POP_{t-1})$ and house prices, (ΔP) for the period 2001 to 2006. The (unweighted) mean inflow of non common language immigrants for the 85 districts was slightly larger than for the common language immigrants. The same result also holds for the variance. The second group of variables are log annual changes in house prices. Average annual price changes in multi-family homes showed the largest gains followed by single-family homes and then condominiums. The same ordering is also observed for the variance.

4.2 Specific features of the Swiss housing market

To show that the results are primarily explained by demand shocks in tight local markets, the main distinguishing features of the Swiss housing market are briefly discussed. House price inflation in Switzerland is low by international standards. Table 2 lists the average annual real increase in house prices for 18 OECD countries from 1970 to 2006. The historical record shows that the average real price increase for Swiss housing is 0.34%. This figure

is the second lowest among the advanced countries and is seven times lower than the returns for U.S. homes examined in Saiz (2007).[13]

Low demand for owner occupancy and nationwide rent control are frequently mentioned as factors explaining the muted growth in Swiss house prices, see Werczberger (1997). The rates for home ownership in Canada (65.8%, national census 2001), New Zealand (67.8%, 2001), Spain (85.3%, 2000), and the United States (67.8%, 2000), countries examined in previous house price-immigration studies, are twice that of Switzerland's (35.5%, 2000). Unlike in many other countries, the Swiss federal government does not actively promote home ownership.[14]

Nationwide rent control is a further reason for low house price inflation in Switzerland. Rent increases must be justified by the landlord's cost increases, see Stalder (2003). As such, rent increases do not fully reflect market pressures. Figure 1 shows the levels of the Wüest and Partner index for

[13]Wüest and Partner (2004b) calculate international investment returns for housing, yielding similar results as in Table 1.

[14]In fact, taxes discourage owner-occupancy in Switzerland. Property is treated as an asset subject to wealth and income taxes for imputed rental income. Further, unlike other financial investments in Switzerland, housing is subject to capital gains taxes. Capital gains are taxed at the cantonal level with rates differing by duration of ownership.

rents and single-family homes from 2000:1 to 2006:4. The quarterly index for rents moves in a trend like manner, reflecting legislative constraints for rent increases. Instead, home prices show greater fluctuations with moderate growth.[15]

A tight housing market is often the consequence of pro-tenant laws. A tight housing market is characterized by in low vacancy and low turnover rates. For the period of investigation, the average vacancy rate, measured by the Bundesamt für Statistik, is 1.34% for Swiss rental units compared to 9.7% for U.S. rental units. The tightness of the Swiss housing market is also reflected in low occupancy turnover rates. Wüest and Partner estimate the average stay to be 5 to 6 years for rental units, 12 to 14 years for condominiums, and 20 years for single family homes.[16]

In the empirical analysis of section 5, only local information from vacancy rates enters the micro specification. Information on turnover and on home ownership rates is unavailable at the annual frequency. Similarly, the market impact from nationwide rent control is only indirectly captured as an explanation for moderate price movements in Swiss house prices.

[15] A corresponding rent index at the regional level is unavailable for Switzerland.

[16] These turnover rates are indicative for select districts based on information from Wüest and Partner (2004a).

5. Estimation results

The empirical results in this section show that immigrant flows from a non common language country are coincident with Swiss house prices, but immigrant flows from a common language country are not. I first present baseline estimates using price indexes of three different home types. Thereafter, robustness checks are conducted on the coefficient estimates for immigration flows from common and non common language countries. The last set of results are for individual European countries.

Table 3 presents IV regressions for single-family homes, multi-family homes, and condominiums. All regressions are estimated with time effects and with five regional controls. The coefficients of these controls are not reported in the tables. Heteroskedasticity-robust standard errors are reported in parentheses.

Table 3 Panel B shows the first-stage regressions between the endogenous variable ($\frac{\Delta I_{it}}{POP_{it-1}}$) and the instrument, SP_{it} (the other variables are not shown). The coefficient estimate for the instruments in the specification for all immigrants is 0.856, immigrants from non common language countries is 0.929, and immigrants from common language countries is 0.836. Each of these instruments are significant at the 1% level. As a further check of

the instruments, the F-test for weak instruments is used. The F-tests for the joint significance of the excluded instruments range between 18.05 and 31.98, suggesting that the instruments do not suffer from the criticism of weak instruments.

Next, Table 3 Panel A shows the second-stage estimates of the baseline specification. The significance of the variable of interest, $(\frac{\Delta I_{it}}{POP_{it-1}})$, is sample dependent, whereas the control variable, Δu_{it-1}, is found to be almost always insignificant. Immigration flows from non common language Europe is found to be significant at the 1% level. The coefficient estimates range from 2.3 for condominiums (see column 8), 4.9 for single family houses (see column 2), to 5.4 for multi-family homes. I interpret the results as saying that an immigration inflow from a non common language country equal to 1% of an area's population is coincident with an increase in prices for single-family homes of about 4.9%.

The results for common language countries are found in columns 3, 6, and 9. These results show that immigration inflow from the neighboring countries (i.e., Austria, France, Germany, and Italy) are insignificant. Further, the coefficients for $(\frac{\Delta I_{it}}{POP_{it-1}})$ are not consistently signed. The coefficient estimate is 1.2 for single family homes, but -1.7 for multi-family homes and -0.7 for

condominiums.

The coefficient estimates for all immigrant inflows are presented in columns 1, 4, and 7. The results for the eleven European country groups are highly significant, but as expected their coefficients lie between those of common and non common language immigrants. The estimate of 2.7 for single-family homes (see column 1) is comparable to the estimates that Saiz (2007) finds for the United States.[17]

The results in Table 3 are interpreted as follows: The nexus between immigration flows and house prices is dependent on a particular group of immigrant flows from non common language countries. To explain this result, it is assumed that common language immigrants demand less amenities and are therefore more price sensitive than non common immigrants. The observation that the common language immigrants are neighboring countries reinforces the conjecture of cultural affinity with the Swiss.

Table 4 presents three robustness tests for single-family homes with regional controls. The robustness tests consider the importance of income for a smaller sample, the influence of large cities, and the introduction of a va-

[17]Further, empirical results for the case of all immigrant inflows are in Degen and Fischer (2007).

cancy ratio. The robustness checks show that the baseline estimates in Table 3 for single-family homes is not sensitive to alternative specifications.

The first check considers the role of income for a restricted sample due to data availability. In columns 1, 2, and 3, I add changes in taxable household income (per capita) for the 85 districts for 2002 to 2006. The results show that income enters significantly for all three groups of immigrant flows, however the coefficients always less than 0.05. In this restricted sample the all immigrant effect for $(\frac{\Delta I_{it}}{POP_{it-1}})$ rises to 3.2 compared to the baseline estimate of 2.7 in Table 3. For the other two immigrant flow measures (NCL and CL) the coefficient estimates are similar to the baseline.[18] They again show that only non common language inflows matter.

A further robustness check considers whether the 11 largest districts with a population greater than 150,000 influence the estimates.[19] Columns 4, 5, and 6 show that the coefficient estimates for $(\frac{\Delta I_{it}}{POP_{it-1}})$ falls in the restricted

[18]To determine whether income or the smaller sample that excludes 124 observations is responsible for the stronger price effect, a specification without income for the restricted sample was also estimated (not shown in Table 4). However, tests showed that the estimate for immigration flows is not influenced by changes in household income.

[19]The 11 districts are Aarau, Basel-City, Basel-Lower Area, Bern, Geneva, Glattal-Furttal, Lausanne, Luzern, St Gall, Winterthur, and Zurich.

sample that excludes the 11 largest cities compared to the baseline estimates of Table 3 for single-family homes. However, it is important to stress that the pattern between common and non common immigrant flows remains the same. Only non common language inflows matter. $\chi^2(6)$ tests reject the null that the immigration effect from the sample without large cities is the same as the baseline estimates from Table 3. This result is interpreted to mean that the baseline estimates are driven by large city dynamics. An explanation for this large city effect is simply that immigrants are more likely to reside in larger districts because these regions offer better job opportunities and amenities. Indeed, over 40% of the total immigrants live in the 11 districts with populations larger than 150,000.

An additional check examines whether local tightness in the housing market influences the baseline estimate. Columns 7, 8, and 9 show regressions of the baseline specification with local vacancy rates, Δv_{it-1}. This variable is insignificant and has no influence on the baseline estimates of Table 3. This result is interpreted to mean that the housing market is tight throughout Switzerland and therefore does not explain local differences in house prices.

Table 5 presents regression results for immigrant flows from individual countries on single-family homes. The regressions are divided between com-

mon language countries with a positive immigrant flow into Switzerland from 2000 to 2006 (i.e., France +10,451, Germany +61,791, and Austria +3,241) and non common language immigrants (i.e., Netherlands +1,763, Portugal +33,256, and the United Kingdom +5,129).[20] The regression specifications follow those presented in Table 3. The ordering of the country results for each language group is based on the immigrant stock in 2006.[21]

The results in Table 5 show that coefficients for immigrant flows from non common language countries are positive and significant and coefficients for immigrant flows from common language countries are close to zero and insignificant except for France. Because the immigrant flows from the individual countries is highly unequal, so are the coefficient values. Germany and Portugal, the largest immigrant groups, offer the most reasonable estimates. A Portuguese immigrant inflow equal to 1% of an area's population is coincident with an increase in prices for single-family homes of about 9%, whereas for German immigrants no price impact is identified. The fact that

[20]The other European immigrant countries that observed outflows are Italy -29,955, Serbia -63, Spain -15,554, and Turkey -5,757.

[21]The end of sample numbers are for non common language immigrants: Portugal 173,477, United Kingdom 26,005, Netherlands 16,143 and common language immigrants: Germany 172,580, France 71,534, and Austria 32,889.

a strong price impact is also found for British and Dutch immigrants suggests that labor skill is not important for the house price result. The larger coefficients for British (31.6) and Dutch (190.5) is explained by their small inflows. Thus, their estimates need to be treated with caution. Similarly, the highly significant results for French immigrant flows is explained by their high concentration in Swiss cities. More than half of the French immigrants live in the five largest cities.[22]

6. Conclusions

The conjecture that non-common language immigrants are more price insensitive than common language immigrants is supported by evidence from the Swiss housing market. The results show that immigrant inflow from a non common language country equal to 1% of an area's population is coincident with an increase in prices for single-family homes of about 4.9%,

[22]The French are a clear outlier, 56% of the immigrants live in the five largest cities. Li (2008) using diversity indexes finds a strong clustering result of French immigrants for Canadian cities. The same percentages for the five largest cities for the other common language countries are lower: Germany 27% and Austria 28%. Instead, the percentages for the non common language countries are higher: Portugal 40%, United Kingdom 45%, and Netherlands 34%.

whereas immigrant inflow from a common language country has no statistically significant impact. These empirical differences support the view that the language skill mix can lead to differences as to how immigrants value local amenities and their ability to integrate in their newly adopted country.

References

Aydemir, A., Borjas, G., 2011. Attenuation bias in measuring the wage impact of immigration, Journal of Labor Economics, forthcoming.

Akbari, A., Aydede, Y., 2009. Effects of immigration on housing prices in Canada, Atlantic Metropolis Centre, Working Paper No. 24-2009.

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

Chiswick, B. R., Miller, P. W., 1995. The endogeneity between earnings: international analysis, Journal of Labor Economics 13(2), 246-288.

Degen, K., Fischer, A. M., 2009. Immigration and Swiss house prices, CEPR Discussion Paper 7583.

Edin, P. A., Fredriksson, P., Aslund, O., 2003. Ethnic enclaves and the economic success of immigrants: evidence from a natural experiment, Quarterly Journal of Economics 118(1), 329-357.

Frattini, T., 2008. Immigration and prices in the UK, UCL Working Paper.

Gonzalez, L., Ortega, F., 2009. Immigration and housing booms: evidence from Spain, IZA DP No. 4333.

Greulich, E., Quigley, J. M., Raphael, S., 2004. The anatomy of rent burdens: immigration, growth and rental housing, Brookings Papers on Urban Affairs, 149-187.

Guiso, L., Sapienza, P., Zingales, L., 2009. Cultural biases in economic exchange, Quarterly Journal of Economics 124(3), 1095-1131.

Li, Q., 2008. Language, immigration, and cities, Ph.D. Thesis, University of British Columbia.

Münz, R., 2008. Migration, labor markets, and integration of migrants: an overview for Europe, SP Discussion Paper No. 0807.

Munshi, K., 2003. Networks in the modern economy: mexican migrants in the U.S. labor market, Quarterly Journal of Economics 188(2), 549-599.

Ottaviano, G. I. P., Peri, G., 2007. The effects of immigration on U.S. wages and rents: a general equilibrium approach, working paper.

Rivera-Batiz, F. L., 1990. English language proficiency and the economic progress of immigrants, Economic Letters 34, 295-300.

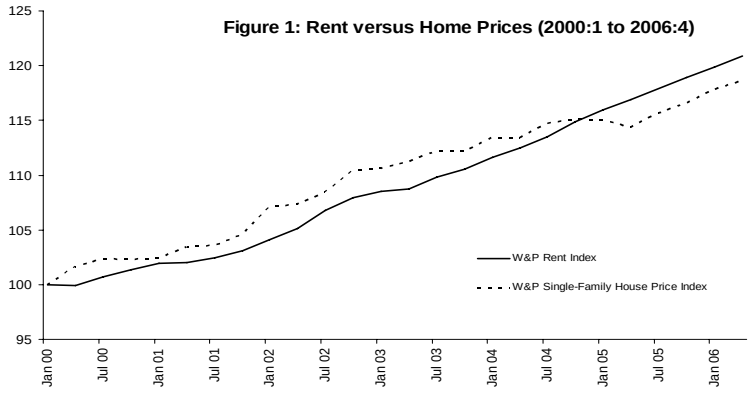
Saiz, A., 2007. Immigration and housing rents in American cities, Journal of Urban Economics 61(2), 345-371.

Stalder, P., 2003. Entkoppelung der Mieten vom Hypozins: Implikationen der Mietrechtsrevision für die Geldpolitik, SNB Quartalsheft (3), 44-57.

Werczberger, E., 1997. Home ownership and rent control in Switzerland, Housing Studies 12(3), 337-353.

Wüest and Partner, 2004a. Immo-Monitoring 2004/1 Analysen und Prognosen Fokus Wohnungsmarkt, Verlag W&P, Zurich.

Wüest and Partner, 2004b. Immo-Monitoring 2004/3 Analysen und Prognosen Fokus Geschäftsflächenmarkt, Verlag W&P, Zurich.



Source: Wüest and Partner, Zurich

Table 1: Summary statistics of the main variables

	obs.	mean	std. dev.	min	max
ΔI(NCL)/POP	510	0.20200	0.03540	-1.67700	2.54000
ΔI(CL)/POP	510	0.13120	0.02643	-1.54460	4.18475
ΔI(ALL)/POP	510	0.33305	0.05029	-3.22119	6.72512
ΔP(single-family home)	510	0.18404	0.36824	-11.01942	16.55078
ΔP(multi-family home)	510	0.37807	0.60517	-15.68036	16.77513
ΔP(condominium)	510	0.08215	0.22790	-8.51641	11.60426

Notes: ΔI(NCL)/POP denotes inflows of non common language immigrants divided by lagged population, ΔI(CL)/POP denotes inflows of common language immigrants divided by lagged population, ΔI(ALL)/POP denotes all immigrant inflows divided by lagged population. ΔP(x) denotes the annual change in house prices, where x is either single-family home, muli-family home, or condominium.

Table 2:Average Annual Real Increase in Single Family House Prices 1970-2006

Germany	-0.38
Switzerland	0.34
Japan	0.36
Sweden	1.00
Finland	1.59
Norway	2.19
Italy	2.23
USA	2.29
Denmark	2.42
Canada	2.53
France	2.55
Australia	2.97
New Zealand	3.19
Netherlands	3.26
Belgium	3.58
Ireland	3.90
Spain	3.95
United Kingdom	4.14

source:finfacts.ie

Table 3:- House Price Indexes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Single Family Homes			*Multi-Family Homes*			*condominiums*	
	All	*NCL*	*CL*	*All*	*NCL*	*CL*	*All*	*NCL*	*CL*
Panel A: 2nd Stage Estimates- Dep. Var. is the y/y Ln-change in House Prices (Δ p_{it})									
$\Delta I_{it} / Pop_{it-1}$	2.749***	4.876***	1.234	3.485***	5.441***	-1.664	1.455**	2.290***	-0.742
	(1.027)	(1.528)	(1.147)	(1.122)	(1.343)	(1.226)	(0.736)	(0.916)	(1.080)
Δu_{it-1}	-0.193	-0.561	-0.062	1.732*	1.867	1.862	0.913	0.969	0.967
	(0.901)	(1.106)	(0.824)	(1.015)	(1.260)	(0.978)	(0.725)	(1.052)	(0.702)
Year FE	y	y	y	y	y	y	y	y	y
Panel B: 1st Stage Estimates - Dep. Var. is the y/y Change of Immigrants to Natives Ratio ($\Delta I_{it} / Pop_{it-1}$)									
SP_{it}	0.856***	0.929***	0.836***	0.856***	0.929***	0.836***	0.856***	0.928***	0.836***
	(0.201)	(0.164)	(0.190)	(0.201)	(0.164)	(0.190)	(0.201)	(0.164)	(0.190)
Observations	510	510	510	510	510	510	510	510	510
Regions	85	85	85	85	85	85	85	85	85
R-Square (first stage)	0.15	0.29	0.15	0.15	0.29	0.15	0.15	0.29	0.15
F-Test (1st stage)	18.05	31.98	19.28	18.05	31.98	19.28	18.05	31.98	19.28

Notes: Panel A of Table 3 displays the baseline relation between changes of immigration (*ALL, NCL non coomon language, CL common language*) and the Swiss house price index. The dependent variable is the annual change in the logarithm of the house price index, Δp_{it}, for single-family homes, multifamily homes and condominimus. $\Delta I_{it} / Pop_{it-1}$ is the y/y change in immigrants relative to the population in region *i* at time *t-1*. Δu_{it-1} denotes the change in unemployed divided by population region i and time t-1, In Panel B the first-stage relation is displayed. The instruments are the estimated immigrant changes, based on the settlement patterns of immigrants in 1997, SP_{it}. All estimations include fixed effects by year and control for regional effects. Heteroskedasticity-robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. [a] First stage regression of (SP_{it}).

Table 4 - Robustness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Restricted Sample with Income	*Restricted Sample with Income*	*Restricted Sample with Income*	*excl. Large Districts*	*excl. Large Districts*	*excl. Large Districts*	*incl. Vacancy Rates*	*incl. Vacancy Rates*	*incl. Vacancy Rates*
	All	*NCL*	*CL*	*All*	*NCL*	*CL*	*All*	*NCL*	*CL*
Panel A: 2nd Stage Estimates - Dep. Var. is the y/y Ln-change in House Prices (Δp_{it})									
$\Delta I_{it} / Pop_{it-1}$	3.245***	4.876***	1.234	2.115**	3.756***	-1.659	2.741***	3.910***	-0.195
	(0.928)	(1.528)	(1.147)	(0.919)	(1.238)	(1.369)	(1.025)	(1.232)	(1.321)
Δu_{it-1}	-0.447	-0.561	-0.062	1.329	1.197	1.460	-0.232	-0.125	-0.146
	(0.862)	(1.106)	(0.824)	(2.070)	(2.078)	(2.381)	(0.895)	(1.052)	(0.921)
$\Delta \ln y_{it-1}$	0.031**	0.033**	0.042***						
	(0.013)	(0.013)	(0..011)						
Δv_{it-1}							0.004	0.004	0.006
							(0.005)	(0.005)	(0.005)
Year FE	y	y	y	y	y	y	y	y	y
Panel B: 1st Stage Estimates - Dep. Var. is the y/y Change of Immigrants to Natives Ratio ($\Delta I_{it} / Pop_{it-1}$)									
SP_{it}	1.147***	1.141***	1.136***	0.987***	1.073***	0.831***	0.854***	0.928***	0.840***
	(0.172)	(0.185)	(0.154)	(0.215)	(0.198)	(0.192)	(0.201)	(0.164)	(0 .192)
Observations	304	304	304	444	444	444	510	510	510
Regions	85	85	85	74	74	74	85	85	85
R-Square (first stage)	0.26	0.31	0.40	0.16	0.29	0.15	0.15	0.29	0.15
F-Test (1st stage)	44.45	38.17	54.16	21.14	29.44	18.64	18.03	32.00	19.10

Notes: Panel A of Table 4 displays the baseline relation between changes of immigration (*ALL, NCL non common language, CL common language*) and the Swiss house price index. The dependent variable is the annual change in the logarithm of the house price index, Δp_{it}, for single-family homes (sfh). $\Delta I_{it} / Pop_{it-1}$ is the y/y change in immigrants relative to the population in region *i* at time *t-1*. $(\Delta I_{it} / Pop_{it-1})^{high}$ is the y/y change in immigrants in high income regions. Δu_{it-1} denotes the change in unemployed divided by population region i and time t-1, $\Delta \ln y_{it-1}$ is the change in the log of per capita income, and Δv_{it-1} is the change in the home vacancy rate. In Panel B the first-stage relation is displayed. The instruments are the estimated immigrant changes, based on the settlement patterns of immigrants in 1997, SP_{ib} and $(SP_{it})^{high}$ respectively. All estimations include fixed effects by year and control for regional effects. Heteroskedasticity-robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. [a] First stage regression of (SP_{it}) ; [b] First stage regression of $(SP_{it})^{high}$.

Table 5- House prices of single family homes and immigrant groups

	Non Common Lauguage			Common Language		
	Portugal	*UK*	*Netherlands*	*Germany*	*France*	*Austria*
Panel A: 2nd Stage Estimates - Dep. Var. is the y/y Ln-change in House Prices (Δp_{it})						
$\Delta I_{it} / Pop_{it-1}$	9.050***	31.612***	190.525*	-1.618	17.645**	0.585
	(2.039)	(9.606)	(119.945)	(1.103)	(7.730)	(10.122)
Δu_{it-1}	-0.486	0.204	-0.062	-0.062	-0.343	-0.090
	(0.908)	(0.872)	(0.824)	(.961)	(0.896)	(0.929)
Year FE	y	y	y	y	y	y
Panel B: 1st Stage Estimates - Dep. Var. is the y/y Change of Immigrants to Natives Ratio ($\Delta I_{it} / Pop_{it-1}$)						
SP_{it}	0.945***	0.873**	0.767**	1.203***	0..716***	1.333***
	(0.095)	(0.341)	(0.317)	(0.119)	(0.127)	(0.455)
Observations	510	510	510	510	510	510
Regions	85	85	85	85	85	85
R-Square (first stage)	0.43	0.27	0.04	0.56	0.26	0.08
F-Test (1st stage)	98.38	6.53	5.87	102.48	31.89	8.59

Notes: Panel A of Table 5 displays the baseline relation between changes of immigration (*ALL, NCL (non common language), CL (common language*) and the Swiss house price index. The dependent variable is the annual change in the logarithm of the house price index, Δp_{it}, for single-family homes. $\Delta I_{it} / Pop_{it-1}$ is the y/y change in immigrants relative to the population in region *i* at time *t-1*. Δu_{it-1} denotes the change in unemployed divided by population region i and time t-1, In Panel B the first-stage relation is displayed. The instruments are the estimated immigrant changes, based on the settlement patterns of immigrants in 1997, SP_{it},. All estimations include fixed effects by year and control for regional effects. Heteroskedasticity-robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. [a] First stage regression of (SP_{it}).