

Real Estate as a Luxury Good: Non-Resident Demand and Property Prices in Paris

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Abstract

This paper examines how the international demand for luxury consumption affects the real estate market in a global hotspot. Using a unique data set of housing transactions in Paris covering the period 1992–2011, we find that non-resident foreigners have partially crowded out residents in highly desirable areas of the city, especially in good times. These non-residents—who in general do not appear to buy for speculation or rental investment—pay higher prices at purchase and realize lower capital gains when reselling. However, we find no evidence that the purchases of secondary residences by foreigners have driven up price levels.

Keywords: housing markets; secondary residences; luxury consumption; trophy assets.

JEL Codes: R21; R23; R32; D12; G12.

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1 Introduction

Property ownership has historically been regarded as an expression of wealth. In recent years, the relation between private wealth and global real estate ownership has become even more important—and complex—because of the ongoing globalization of the market for luxury properties. The amount of private wealth invested in new large (\$10m+) real estate deals worldwide exceeded \$300bn in 2012 (Savills, 2014). Continued global wealth creation has been a key driver for prime property markets. Real estate in prime locations attracts investors seeking a safe haven, a portfolio diversifier, a “trophy asset” that signals power and sophistication, or just personal pleasure.

In this paper, we study how the demand coming from *non-resident foreign* buyers affects the housing market in an internationally attractive city. The object of our analysis is the Paris housing market. We obtain detailed information on all real estate transactions in the French capital between 1992 and 2011 involving foreign buyers and sellers from a database of notarial deeds. The data are complemented by a random sample of all transactions for which both the buyer and the seller are French. In total, our database covers 72,837 transactions over a 20-year period.

Certain global hotspots, such as London, have traditionally been viewed as safe-haven investments (Badarinza and Ramadorai, 2014). In other locations such as Paris, however, safe-haven attributes and the prospect of potential capital gains may not be the first things on foreign buyers’ minds. In our data, a substantial majority of non-resident foreigners indeed use their property as a secondary residence. Relatively few properties bought by non-resident foreigners are rented out (or resold quickly). At least in Paris, variation in purchases by non-resident foreigners are

thus mainly driven by fluctuations in the global demand for luxury housing consumption.¹

We use our data to study the geographical spread in non-resident foreign purchases. We collect census data on the proportion of secondary residences among all properties in each neighborhood prior to the start of our sample period as a proxy for the attractiveness of neighborhoods as locations for second homes. We show that, even if all types of neighborhoods have seen an average net inflow of non-resident foreigners since 1992, the crowding out of residents by non-residents has been much stronger in the most attractive neighborhoods. Moreover, in line with expectations, we find that the demand by non-resident foreigners for real estate in desirable areas goes up more in times of rising economic confidence (i.e., years in which equity markets perform well).

Next, we hypothesize that non-resident foreigners, who may have less bargaining power and higher private valuations, pay higher amounts in the Paris real estate market. We find strong evidence that non-resident owners are indeed purchasing at higher prices (keeping property characteristics fixed), and are realizing lower capital gains upon resale than other real estate market participants.

Finally, we study the impact of the crowding out of residents by non-residents on real estate prices in the French capital. Ex ante, it is not clear that we should see a positive correlation between non-resident foreign demand and house prices. “Locals” may avoid or move out of areas where the inflow of “immigrants” puts upward pressure on housing costs (Saiz, 2007). We will only observe a positive effect of non-resident foreign demand on house prices if the local population is not very sensitive to changes in housing costs. (New housing construction is severely limited in Paris due to the lack of available land.)

¹In this respect, Paris real estate may be compared to luxury collectibles, such as art. Recent figures compiled by Knight Frank indicate that 61% of high-net-worth individuals acquire investments of passion for “personal pleasure” and 15% to signal their “status”, while investment was the primary driver for only 22% of respondents.

We find a (relatively small) positive conditional correlation between the return on resale and the number of purchases by non-resident foreigners in the neighborhood of the house over the holding period. However, when instrumenting the number of non-resident purchases with variables capturing the historical settlement patterns of foreigners and the attractiveness of a neighborhood to non-residents, the evidence disappears; the relation even changes sign.

The finding that purchases by non-resident foreigners do not have any effect on housing prices stands in contrast to existing studies that look at the effects of “resident” immigration (Saiz, 2007; Gonzalez and Ortega, 2013), and to anecdotal evidence presented by the media. However, our results are supportive of the argument that high-income locals compete for the same assets as non-resident foreigners, and that local out-migration offsets increases in demand coming from non-resident foreigners. As such, our finding echoes the results of Greulich, Quigley, and Raphael (2004), who find no effect of immigration on rents when low-income immigrants compete against low-income locals in the real estate market.

1.1 Related Literature

This paper connects to several strands of the literature. First, this paper is related to existing studies on the behavior of foreign or “out-of-town” buyers, and their impact on price levels. In the U.S., Saiz (2007) finds that an immigration inflow equal to 1% of a city’s population is associated with increases in average rents and housing values of about 1%. Gonzalez and Ortega (2013) document a similar effect of immigration on housing prices for Spain. Cvijanovic, Favilukis, and Polk (2010) find that *expected* immigration forecasts future state-level housing returns, illustrating that real estate prices are not incorporating all available information. Chinco and Mayer (2013) document that out-of-town buyers of second houses behaved like misinformed speculators

and drove up house price in cities like Phoenix, Las Vegas, and Miami in the mid-2000s. They argue that this type of buyers is less informed about economic fundamentals than local residents, and is therefore more prone to chasing past price trends. Badarinza and Ramadorai (2014) show that the international demand for safe-haven assets impact housing prices in London. One important difference between these papers and our work is that we specifically focus on a group of *non-resident* buyers for whom *luxury consumption* motives are likely to be more relevant than investment.

Second, there is also a small literature on housing price dynamics in highly attractive locations. Ruf and Levi (2011) explore the market for “international” real estate in North America: they study prices of recreational properties in exclusive ski resorts and oceanfront estates, where the rates of foreign ownership are typically elevated. They find that there is a long-term equilibrium relationship between exchange rates and relative price levels. Next, Gyourko, Mayer, and Sinai (2013) provide evidence that in highly desirable U.S. cities with low rates of new housing construction—so-called “superstar cities”—a growing group of high-income households has been crowding out households with a lower willingness-to-pay for scarce housing over time. In this sense, living in such a superstar city is like owning a scarce luxury good. In contrast to Gyourko, Mayer, and Sinai (2013), we are interested in the effects of the *international* demand for *secondary* residences.

Third, we add to a literature on the drivers of the demand for luxury consumption goods or “trophy assets”. Aït-Sahalia, Parker, and Yogo (2004) show that luxury consumption is highly correlated with equity returns. They also document a positive relation between prices of exclusive New York apartments and the equity market. Goetzmann, Renneboog, and Spaenjers (2011) show how changes in income inequality and financial asset returns affect the demand for artworks.

Fourth, several papers have studied how price outcomes in markets for illiquid and heterogeneous goods are determined by differences in bargaining power and private valuations between buyers and sellers. For example, Harding, Rosenthal, and Sirmans (2003) show that bargaining power is inversely related to wealth and trading experience in a market. Lovo and Spaenjers (2016) present a model of trading in unique durable assets—such as artworks and luxury real estate—in which investors with high private use values pay more and realize lower financial returns upon resale.

The remainder of this paper is organized as follows. The next section describes the data, and discusses the geographical and temporal variation in purchases by non-resident foreigners in Paris. It also shows how residents have been crowded out in desirable areas, especially in good times. Section 3 shows that non-residents pay higher prices, and realize lower capital gains when reselling. Section 4 illustrates the positive conditional correlation between inflow of non-resident foreigners and property price changes, but also documents that this result disappears once using an instrumental variables approach. Section 5 concludes.

2 Non-Resident Foreigners in the Paris Housing Market

2.1 Data on Real Estate Transactions

The main data for our study come from the BIEN (“Base d’Informations Economiques Notariales”) database managed by the notary association of the Paris region (“Notaires de Paris – Ile-de-France”). The database of notarial deeds covers about 90% of all transactions taking place in Paris.² It contains detailed information on each transaction, the characteristics of each

²Each property transaction in France needs to take place through a notary, but it is not mandatory for notaries to feed transaction information into the database.

underlying property, and some information on the buyers and sellers.

We obtain data on the 39,125 observed transactions of houses and apartments in Paris over the period 1992–2011 in which either the buyer or the seller (or both buyer and seller) was non-French.³ Moreover, we obtain data on a random sample of 10% of all transactions in which both the buyer and the seller were French households—a sample of 33,712 transactions. In total, our data set thus contains information on 72,837 transactions over a 20-year period. Table 1 shows the number of data points per combination of buyer and seller nationality status for each sample year.

[Insert Table 1 about here]

2.2 Foreign Purchases and the Demand for Secondary Residences

Many of the purchases by foreigners in Paris are of course related to immigration and local employment opportunities rather than the acquisition of a second house. The data set allows us to disentangle resident from non-resident foreign buyers. Table 2 shows the estimated relative importance of both groups and of French buyers in each sample year. It also contains the average purchase price for each group and year. The table illustrates the sharp rise in housing prices in Paris over the last two decades, especially over the periods 1999–2007 and 2009–2011. It also shows that the average purchase price is higher for non-resident foreigners than for French buyers. For example, in 2011 the average price of a purchase by a non-resident foreigner was 537,543 euros; by contrast, the average purchase price for French buyers was 427,750 euros. We see the opposite pattern for resident foreigners.

[Insert Table 2 about here]

³We only consider trades between households, and not those involving governments, corporations, etc. We also limit ourselves to transactions for which the nationality status of both buyer and seller are known.

Our working hypothesis is that purchases by non-resident foreigners in Paris are often driven by luxury consumption motives. We can indirectly test this by computing how frequently sellers of each nationality group used their property as a secondary residence (rather than as a rental property, for example). About 25% of foreign sellers used their Paris real estate as a secondary residence, and only 12% as a rental investment. However, among *non-resident* foreign sellers, 62% used their property as a secondary residence, and 27% as a rental investment.⁴

To corroborate the point that speculative investment is unlikely to be a major motive for real estate purchases by non-resident foreigners in Paris, we compute holding periods for sales for which we also have information on the previous transaction. The median holding period for non-resident foreign sellers is 7 years, which compares to 8 years for resident foreign sellers and for French sellers. These numbers suggest that there is little difference in the “flipping” activity between foreign and domestic market participants. We can also consider a few other descriptive statistics. The average age among all non-resident foreign buyers in our sample is 49.5 years, compared to 42.8 years for all other buyers. While 50% of non-resident foreign buyers have higher managerial and professional positions, only 40% of the other buyers do. Finally, we saw before that non-residents buy substantially more expensive properties. All this evidence is consistent with luxury consumption motives being important among non-resident foreigners active in the Paris real estate market.

Table 3 shows the nationalities that are the most important foreign buyer groups in our data set. We see the largest numbers of purchases by households from Italy, Great Britain, the United States, Portugal, and Algeria. There is clear variation in the relative importance of non-residents

⁴We have data on the use by sellers in about half of all cases. The percentages reported here are ratios computed using the non-missing observations. The (intended) use is missing much more frequently for buyers. A small fraction of foreigners who are officially not a resident of France seem to use their Paris property as their primary residence.

and in the use as secondary residences between nationalities. For example, 72.6% of Swiss buyers are non-residents and 44.7% of Swiss sellers used the Paris property as a secondary residence. By contrast, only 4.1% of Chinese buyers reside outside France and not more than 8.8% of Chinese sellers used the property as a second home. The correlation between the relative importance of non-residents and the use as secondary residence across nationalities is 0.83.

[Insert Table 3 about here]

We now turn to the geographical spread of foreign purchases. Figure 1 shows a map of Paris. The area covered by the city is 105 square kilometers (or 41 square miles). Paris is divided into 20 administrative districts or “arrondissements”. Each district has its own postal code and city hall. The district has become an important unit of geographical reference in the city. Figure 1 indicates the districts and the location of some of Paris’ most famous buildings and museums. Table 4 shows how many of the foreign purchases in our database take place in each of these districts. The table also shows how many foreign purchases were by non-residents. Not surprisingly, the percentages are very high for, for example, the 5th, the 6th, and the 7th district, with the Quartier Latin, the Jardin du Luxembourg, and the Eiffel Tower respectively. The proportions are much lower for the less touristic outer districts, such as the 19th and 20th districts.

[Insert Figure 1 and Table 4 about here]

2.3 Neighborhood Desirability and the Crowding Out of Residents

If non-resident foreigners are indeed generally buying for luxury consumption motives, we can expect them to “settle” in the locations that are the most desirable for secondary housing.

The district-level data that we just presented are not ideal to study this issue. There are only twenty districts; as the city of Paris has about 2.3 million inhabitants, the average district has a population of over 100,000. We therefore use information on a more detailed level, namely that of the “IRIS” (“Ilots Regroupés pour l’Information Statistique”) neighborhood units created by the French statistical office INSEE. Each IRIS is a block of buildings containing about 2,000 inhabitants (individuals, not households). The neighborhoods are homogeneous in terms of building type, and are delimited by main roads. Our database covers transactions in 918 different IRIS neighborhoods in Paris. We have information on about 80 transactions per IRIS on average.

As a proxy for the attractiveness of each neighborhood as a location for a second home, we collect census data from INSEE on the proportion of secondary residences among all properties (owned by both French and foreign buyers) in each neighborhood in the year 1990. Crucially, this measure looks at the *stock* rather than the *flow* of real estate, and it uses data from before the start of our sample period. Moreover, it is important to note that we are defining as attractive the areas with higher *second-home ownership* rates, rather than areas with more *foreign or foreign-born inhabitants* in 1990.⁵ As one can see from Table 5, neighbourhoods with higher second-home ownership rates tend to be inhabited by more highly educated households. They also see higher transaction prices, even in transactions between French buyers and sellers.

[Insert Table 5 about here]

Table 5 shows the relative importance of purchases by non-resident foreigners, aggregated across the whole sample period, for each decile of “desirability” (i.e., the proportion of secondary residences in 1990). As expected we see a strong positive correlation between neighborhood

⁵Additional analysis using year-1982 census data at the district level shows that there is actually a negative correlation between the proportion of properties used as a secondary residence on the one hand and the proportion of foreign or foreign-born inhabitants on the other hand.

attractiveness as a location for a second home and the importance of purchases by non-resident foreigners in our database. For example, in the least attractive neighborhoods foreign non-residents contribute 1.3% to total purchasing activity, while in the most attractive neighborhoods this percentage rises up to 8.3%. This result speaks to the luxury aspect of demand coming from non-resident foreigners.

The same table shows a very different pattern for resident foreigners. For example, purchases by resident foreigners constitute 6.8% of all purchasing activity in the bottom decile of neighborhoods sorted on their attractiveness, while their purchases contribute only 4% to all buying activity in the top decile. These figures suggest that we are not just picking up the effect of differences in demand between French nationals and foreigners.

We also compute the aggregate net inflow as the number of purchases by non-resident foreigners minus the number of sales by non-resident foreigners in each set of neighborhoods over our complete sample period 1992–2011. The penultimate column of Table 5 shows the accumulated net inflow of non-resident foreigners per decile of desirability. The last column shows for each desirability category the number of years (out of 20) in which net inflow was positive. We see that all neighborhoods have seen a positive net inflow of non-resident foreigners, but that the crowding out has been much stronger in the most attractive neighborhoods.⁶

The crowding out of local residents by wealthy non-resident foreigners over time is similar to the historical trends in “superstar cities” documented by Gyourko, Mayer, and Sinai (2013), but on a supra-national level and in the market for secondary residences. Given the positive covariance between equity returns and luxury consumption demand, as documented in Aït-Sahalia, Parker, and Yogo (2004), we would also expect that the demand by non-resident foreigners for

⁶Given that we see the same relation between “desirability” and prices paid by French buyers in 2011 as in 1992, it is reasonable to assume that these real estate units would have been purchased by local residents in the absence of non-resident foreign demand.

real estate in desirable areas goes up more in “good times”. We test this hypothesis by relating the annual number of purchases by non-resident foreigners in a neighborhood to the interaction between neighborhood desirability and lagged equity market returns (as captured by returns on the French index CAC40), controlling for year fixed effects and the desirability of the neighborhood. The results of the regression analysis confirm this hypothesis—see models (1) and (2) in Table 6. The estimated coefficient on the interaction term is positive and highly significant, suggesting that purchases by non-resident foreigners indeed increase more in desirable areas in “good times”, i.e., when the equity market is doing well. On the other hand, as we can see from columns (3) and (4), the estimated coefficient on the interaction term is not statistically significant in the case of resident foreigners.

[Insert Table 6 about here]

3 Prices Paid and Returns Realized by Non-Residents

Prices paid in the real estate market may be a function of the attributes of (potential) buyers and sellers. Previous studies have shown that housing market participants that are uninformed (Wilhelmsson, 2008) and wealthy (Harding, Rosenthal, and Sirmans, 2003) have less bargaining power. Lovo and Spaenjers (2016) on the other hand present a model of trading in luxury assets in which investors with a high private valuation of the asset are willing to pay more, and realize lower financial returns when reselling.

Non-resident foreigners may be expected to pay more for identical properties because of either lower bargaining power or higher private values.⁷ However, how market participant char-

⁷We do not attempt to empirically disentangle the two effects, since any reasonable proxy for private valuations—for example, wealth—will also be correlated with bargaining power.

acteristics relate to transaction prices is not straightforward to measure by comparing prices using hedonic methods, as preferences may be correlated with characteristics. For example, non-resident foreigners may buy flats of higher quality along some unobservable dimension. Harding, Rosenthal, and Sirmans (2003) propose the following solution to this problem. Assume that we are interested in the effect of a certain binary attribute (e.g., non-resident foreigner or not) on the price outcome, and that the dummy variable B (resp. S) captures this attribute for the buyer (resp. seller). Under the assumptions of symmetric effects for purchases and sales and symmetric demand over buyers and sellers,⁸ one can identify the effect of this attribute by introducing the variables $(S - B)$ and $(S + B)$ to the hedonic regression. The coefficient on the first variable measures the effect of seller and buyer traits on price outcomes, while the coefficient on the second variable measures the effect of the same characteristics on demand. We thus run the following hedonic regression:

$$\ln P_{i,t} = \alpha + \kappa(S_{i,t}^{NRF} - B_{i,t}^{NRF}) + \lambda(S_{i,t}^{NRF} + B_{i,t}^{NRF}) + \sum_{m=1}^M \zeta_m x_{m,i} + N + T + \varepsilon_{i,t}, \quad (1)$$

where $P_{i,t}$ is the price of property i in year t , $x_{m,i}$ is the value of hedonic characteristic m for property i , N are neighborhood (i.e., IRIS) fixed effects, T are year fixed effects, and $S_{i,t}^{NRF}$ and $B_{i,t}^{NRF}$ are dummy variables that equal one if the seller or the buyer is a non-resident foreigner. The coefficient of interest κ will be negative if non-resident foreign buyers pay more and sell for less. The “demand coefficient” λ will be positive if non-resident foreigners select properties that are of otherwise unobservably higher quality.

Column (1) of Table 7 shows the results of a regression on our data with the following hedonic

⁸Bargaining power is arguably more likely to have a symmetric effect on purchases and sales than private values, unless high private-value owners are more likely to sell only in distress.

characteristics as control variables: (log) floor level, (log) surface area (in m^2), dummy variables indicating the period of construction (going from “before 1850” to “2000–2010”), and dummy variables indicating the presence of a parking place, an elevator, or a terrace. The results show that non-resident foreigners prefer properties that are of higher quality in a way not captured by our hedonic variables. They also have less bargaining power or higher private valuations: they pay more and sell for less. Importantly, the effect is not driven by the foreign nationality of these individuals: column (2) of Table 7 shows opposite signs on the equivalent variables for resident foreigners. In column (3), we also control for differences in bargaining power or willingness-to-pay related to gender, age, and marital status, but the conclusions remain the same. (In line with previous research, we find that female and older individuals appear to have less bargaining power in real estate transactions.)

[Insert Table 7 about here]

As we also have information on the *previous* transaction price for slightly more than half of the transactions in our database (even if it took place before 1992), we can verify that non-resident owners are indeed realizing lower capital gains between purchase and sale. We run a regression of the following form:

$$\ln R_{i,y_1,y_2} = \alpha + \gamma_1 S_{i,y_2}^{NRF} + \gamma_2 B_{i,y_2}^{NRF} + \gamma_3 S_{i,y_2}^{RF} + \gamma_4 B_{i,y_2}^{RF} + Y_1 \times Y_2 + \varepsilon_{i,y_1,y_2}, \quad (2)$$

where R_{i,y_1,y_2} is the annualized log capital gain on property i bought in year y_1 and sold in y_2 , and Y_1 and Y_2 are purchase and sale year dummies. As before, S_{i,y_2}^{NRF} and B_{i,y_2}^{NRF} (resp. S_{i,y_2}^{RF} and B_{i,y_2}^{RF}) are dummy variables that equal one if the seller or the buyer is a non-resident (resp. resident) foreigner. A negative γ_1 and a positive γ_2 signal that non-resident foreigners are selling

for less and buying for more.

Column (1) of Table 8 show the results of the estimation of equation (2). We limit our sample to holding periods of at most 20 years, to mitigate the effects of improvements and/or deteriorations that may become important over longer time periods, and that might also correlate with buyer and seller attributes. In line with the hedonic results, we find that non-resident foreigners realize significantly lower capital gains. The annualized capital gain is lowered by almost two percentage points on average relative to that of a French owner selling to a French buyer, so the effect is also economically meaningful. Furthermore, capital gains realized by all owners are higher if they resell to a non-resident foreigner. Importantly, we keep the year of purchase and the year of sale constant here; ours is thus not a result about timing of exit as in Chinco and Mayer (2013). Also note that we find very different results for resident foreign buyers, who pay lower *lower* prices than French buyers.

[Insert Table 8 about here]

To control for the possibility of secular price appreciation trends over our sample period that vary in function of the demography or characteristics of the neighborhood, we control in column (2) of Table 8 for the percentage of adults with a higher education degree in each neighborhood and for the proportion of properties used a secondary residence (both measured using census data from 1990, so before the start of our time frame). In column (3), we follow a different strategy and add neighborhood fixed effects. The results remain very similar.

4 The Impact of Non-Resident Demand on Prices

4.1 Conditional Correlations

A next question is what is the impact of the crowding out of residents by non-residents on real estate prices in the French capital? Ex ante, it is not clear that we should see a correlation between non-resident foreign demand and house prices. “Locals” may avoid or move out of areas where the inflow of “immigrants” puts upward pressure on housing costs (Saiz, 2007). For a fixed amount of housing supply, inflows of non-residents will then be associated with outflows of residents. Non-resident foreign buyers may be less sensitive to housing costs than local market participants because specific amenities and networks are more important for them (Saiz, 2007). This can also explain why their purchases tend to be spatially concentrated.

To study the correlation between non-resident purchases and housing prices, we first expand equation (2) as follows:

$$\ln R_{i,y_1,y_2} = \alpha + \beta Purchases_{n,y_1 \rightarrow y_2}^{NRF} + \text{controls} + \varepsilon_{i,y_1,y_2}, \quad (3)$$

where $Purchases_{n,y_1 \rightarrow y_2}^{NRF}$ equals the average annual number of purchases by non-resident foreigners in neighborhood n between purchase year y_1 and sale year y_2 . If β is positive, then higher capital gains are realized on properties in neighborhoods that have seen more purchases by non-resident foreigners over the holding period.

We estimate equation (3) in Table 9, mirroring the first two specifications from the previous table.⁹ We need to limit ourselves to properties for which we observe two prices between 1992

⁹We do not estimate a model with neighborhood fixed effects, as we want to—and need to—exploit the variation in non-resident inflow *between* neighborhoods.

and 2011. We see a statistically significant—but in terms of economic magnitude relatively low—positive conditional correlation between the number of purchases by non-resident foreigners and price changes. The coefficient of 0.002 implies that ten more property purchases by non-resident foreigners in a (2,000-inhabitant) neighborhood go together with an price increase of about 2 percent.

[Insert Table 9 about here]

4.2 Instrumental variables approach

One concern is that properties in neighborhoods with different inflows of non-residents might have different rates of appreciation for reasons unrelated to that inflow, even when controlling for the different capital gains on houses in (ex ante) highly educated or attractive areas over our time frame. For example, it may be that public investments in the quality of daily life in a neighborhood lead to both an increase in property prices and to an increase in the attractiveness of the neighborhood to foreigners. To solve this endogeneity problem, we need to find an exogenous source of cross-sectional variation in the number of purchases by non-resident foreigners, so that we can implement an instrumental variables approach.

Inspired by previous work on the effects of immigration on housing markets (e.g., Saiz, 2007, Gonzalez and Ortega, 2013), our main instrument predicts actual inflows of non-resident foreigners into the different districts of Paris by allocating the *aggregate* inflow of non-resident foreigners over a period to the districts based on historical settlement patterns. Each area is thus assigned a “share” of total inflow based on pre-existing networks, which is motivated by the observation that, all else equal, foreigners tend to buy where their countrymen have bought before. The intuition for this is twofold. First, as also argued by Badarinza and Ramadorai (2014) in the case

of the London property market, foreign buyers flock together in so-called “preferred habitats”, which generates temporal persistence in the locational choices of nationality groups of buyers. Second, the initial presence of different foreign buyer nationality groups leads to a reduction of information asymmetries, which can spur future foreign buyer inflow.

Our main instrument $Share_{a,y_1 \rightarrow y_2}$ is constructed as follows. First, we consider for each nationality how households of this nationality were distributed over the twenty districts in Paris in 1982 using census data from INSEE. Second, for each year over our sample period 1992-2011 and for each nationality, we allocate the non-resident inflow to the different districts based on the geographical spread from the first step. Third, we sum the predicted inflows over all nationalities. Finally, we divide by the number of neighborhoods in the district. The result is that this instrumental variable will take a high value for all neighborhoods in a given district in a given year if in that year there is a high inflow in Paris of nationals of countries that were highly represented in that district in 1982.

Because we can expect the inflow to concentrate in highly desirable areas for reasons outlined before, we interact this first, district-level instrumental variable with the proportion of secondary residences in the neighborhood to create a second, neighborhood-level instrumental variable.

Table 10 shows the results of our analysis. In each case, we instrument the average annual number of purchases by non-resident foreigners over the holding period in the first step, while we estimate the relation between non-resident purchases and prices in the second step. We find that both instruments carry strong predictive power for purchases: the estimated coefficients on the instruments in the first-stage regressions are highly significant. However, by inspecting the estimated coefficients on $Purchases_{n,y_1 \rightarrow y_2}^{NRF}$ in the second-stage regressions, we see that they are negative in both specifications. (In one case the effect is even statistically significant.) Therefore,

we cannot conclude that purchases by non-resident foreigners have a causal positive effect on price levels.

[Insert Table 10 about here]

Our result is in line with existing literature that matches immigrants with certain sets of locals based on income. A study by Greulich, Quigley, and Raphael (2004) focuses on the effect of immigration on those U.S.-born (mostly with lower incomes) that are most likely to compete for housing with immigrants. It does not find much of an effect of immigration on rents for this group, suggesting that the migration (and housing supply) response can offset the impact of immigrant inflow. Similarly, we find evidence of high-income locals and non-resident foreigners competing for the same trophy assets, and of increases in non-resident foreign demand being offset by out-migration of locals.

5 Conclusion

In this paper, we examine how the international demand for luxury consumption affects prices and returns in the Paris housing market. We obtain detailed information on all real estate transactions in Paris between 1992 and 2011 involving foreign buyers and sellers—and on a random sample of transactions with French buyers and sellers—from a database of notarial deeds. We find that non-resident foreigners crowd out residents in highly attractive areas of the city, especially in good times. Moreover, these non-residents pay higher prices at purchase and realize lower capital gains when reselling. However, while purchases by non-resident foreigners are correlated with higher rates of price appreciation, we do not find evidence of a positive causal effect once instrumenting non-resident purchases. These results contribute to our understanding

of the role of foreign buyers in real estate markets, and of housing price formation in highly attractive locations.

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Figure 1: A map of Paris indicating the 20 “arrondissements”



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Table 1: Composition of database

Year	Foreign buyer French seller	French buyer Foreign seller	Foreign buyer Foreign seller	French buyer French seller (10% sample)
1992	325	129	28	929
1993	381	142	29	1,098
1994	607	286	43	1,431
1995	704	259	64	1,200
1996	951	421	108	1,745
1997	976	378	87	1,597
1998	1,348	466	111	1,911
1999	1,399	678	127	2,415
2000	1,746	660	161	2,249
2001	1,820	665	190	2,211
2002	855	417	89	1,153
2003	1,694	810	194	1,941
2004	1,707	982	223	2,011
2005	1,733	1,056	215	2,169
2006	819	547	109	1,023
2007	1,618	990	211	2,027
2008	1,418	852	193	1,635
2009	1,191	788	163	1,348
2010	1,270	1,107	200	1,943
2011	1,159	1,026	200	1,676
Total	23,721	12,659	2,745	33,712

Notes: This table shows the composition of our database in each sample year. The data come from the BIEN (“Base d’Informations Economiques Notariales”) database managed by the notary association of the Paris region (“Notaires de Paris – Ile-de-France”). Our data set includes all transactions of houses and apartments in Paris over the period 1992–2011 in which either the buyer or the seller (or both buyer and seller) was non-French, and a random sample of 10% of all transactions with a French buyer and seller.

Table 2: Buyer groups and average price levels 1992–2011

Year	Non-resident foreign buyers		Resident foreign buyers		French buyers	
	Freq.	Mean price	Freq.	Mean price	Freq.	Mean price
1992	1.0%	247,142	2.5%	115,611	96.5%	153,966
1993	1.2%	189,551	2.4%	119,053	96.5%	147,604
1994	1.5%	223,925	2.7%	113,399	95.7%	145,791
1995	1.8%	226,347	4.1%	115,674	94.1%	140,639
1996	1.7%	155,747	3.9%	97,982	94.4%	140,096
1997	2.1%	155,955	4.0%	95,234	93.9%	130,403
1998	2.5%	175,087	4.5%	99,138	93.1%	137,482
1999	2.0%	174,194	3.8%	112,043	94.2%	141,257
2000	3.1%	227,073	4.5%	122,929	92.4%	166,224
2001	3.4%	219,187	4.7%	143,252	91.9%	169,091
2002	3.0%	236,078	4.3%	145,821	92.7%	173,959
2003	3.3%	250,396	5.2%	180,541	91.5%	211,088
2004	3.3%	273,916	5.0%	205,309	91.6%	241,556
2005	3.2%	337,947	4.7%	241,537	92.1%	278,811
2006	3.3%	354,858	4.6%	270,620	92.1%	310,977
2007	3.5%	433,850	4.4%	300,716	92.1%	333,879
2008	3.7%	427,646	4.8%	329,146	91.4%	332,414
2009	3.7%	408,479	4.9%	307,953	91.3%	348,388
2010	2.5%	467,097	4.2%	350,331	93.3%	385,338
2011	2.7%	537,543	4.4%	396,762	92.9%	427,750
Total	2.7%	303,183	4.3%	202,164	93.0%	230,012

Notes: This table shows the estimated relative importance of non-resident foreigners, resident foreigners, and French buyers among all real estate buyers in each sample year. It also shows the average purchase price level in euros for each group.

Table 3: Most important foreign buyer nationalities 1992–2011

Nationality	Number of purchases	Non-residents among buyers	Use as secondary resi- dence among sellers
Italy	4,275	57.3%	29.3%
Great Britain	2,345	49.8%	23.7%
United States	2,030	61.9%	32.2%
Portugal	1,798	3.1%	14.5%
Algeria	1,500	19.5%	26.0%
China	1,499	4.1%	8.8%
Germany	1,286	39.0%	25.1%
Spain	1,144	23.4%	16.9%
Morocco	1,065	33.1%	25.2%
Tunesia	753	18.1%	17.1%
Belgium	736	44.6%	25.1%
Switzerland	537	72.6%	44.7%
Ireland	466	60.9%	24.7%
Japan	454	26.2%	22.9%
Iran	377	34.0%	30.2%

Notes: This table shows the foreign nationalities with the largest numbers of purchases in our database. It also shows the proportion of non-residents among foreign buyers, and the relative importance of secondary residences (vs. primary residences and rental properties) among foreign sellers.

Table 4: Foreign purchases per district 1992–2011

District	Number of foreign purchases	Non-residents among foreign buyers
1 st district	389	63.8%
2 nd district	478	56.7%
3 rd district	1,054	61.4%
4 th district	932	72.4%
5 th district	852	60.2%
6 th district	910	74.9%
7 th district	1,084	65.7%
8 th district	635	69.3%
9 th district	807	36.8%
10 th district	1,386	23.0%
11 th district	2,207	36.6%
12 th district	898	25.6%
13 th district	1,263	23.2%
14 th district	1,021	38.8%
15 th district	2,394	33.0%
16 th district	2,188	50.6%
17 th district	1,737	30.3%
18 th district	3,076	26.6%
19 th district	1,852	14.5%
20 th district	1,271	19.2%

Notes: This table shows the number of purchases by foreigners in each district. It also shows the proportion of non-residents among foreign buyers.

Table 5: Crowding out by non-resident foreigners in desirable neighborhoods 1992–2011

Deciles of % secondary residences in 1990	% higher education in 1990	Mean price per m^2 in 1992	Non-resident foreigners among buyers	Resident foreigners among buyers	Total net inflow of non-resident foreigners	Years with + net inflow of non-resident foreigners
$d = 1$	7.1%	2,183	1.3%	6.8%	21	14
$d = 2$	11.9%	2,419	1.3%	6.6%	38	11
$d = 3$	14.5%	2,471	1.4%	4.6%	101	12
$d = 4$	16.0%	2,380	1.5%	4.1%	116	14
$d = 5$	16.4%	2,516	2.0%	4.2%	271	19
$d = 6$	18.7%	2,720	2.1%	4.1%	268	17
$d = 7$	21.1%	3,007	2.3%	3.7%	223	16
$d = 8$	23.1%	3,085	2.7%	4.0%	337	17
$d = 9$	24.3%	3,433	4.4%	3.7%	772	19
$d = 10$	23.8%	3,807	8.3%	4.0%	999	20

Notes: This table shows a number of statistics for neighborhood deciles sorted by the percentage of residences that were used as secondary residences in 1990: the proportion of adults with a higher education degree in 1990, the average real estate transaction price in euros per m^2 in 1992 (i.e., the first year of our sample period) as measured in all transactions between French buyers and French sellers, the relative importance of non-resident and resident foreigners among all real estate buyers over the period 1992–2011, the total net inflow (i.e., purchases minus sales) by non-resident foreigners over the same period, and the number of years (out of 20) for which this net inflow was strictly positive.

Table 6: Crowding out by non-resident foreigners in desirable areas in good times

	(1)		(2)		(3)		(4)
Dependent variable:	Purchases non-resid. foreigners		Purchases non-resid. foreigners		Purchases resident foreigners		Purchases resident foreigners
$Secondary_n \times Equities_{t-1}$	3.096 (0.991)	***	2.204 (0.877)	**	0.293 (1.227)		0.167 (1.093)
$Secondary_n$	11.209 (0.239)	***			-2.529 (0.296)	***	
Neighborhood FE	No		Yes		No		Yes
Year FE	Yes		Yes		Yes		Yes
N	15,772		15,772		15,772		15,772
R^2	0.19		0.43		0.06		0.33

Notes: This table shows the results of a set of OLS regressions with the number of purchases by non-resident or resident foreigners in neighborhood n in year t as the dependent variable. $Secondary_n$ equals the percentage of residences in neighborhood n that were used as secondary residences in 1990. $Equities_{t-1}$ is the lagged return on the CAC40. Standard errors are below the coefficients. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 7: Non-resident foreigners pay more for the same property

	(1)		(2)		(3)	
$(S_{i,t}^{NRF} - B_{i,t}^{NRF})$	-0.052	***	-0.049	***	-0.042	***
	(0.003)		(0.003)		(0.003)	
$(S_{i,t}^{NRF} + B_{i,t}^{NRF})$	0.020	***	0.008	***	0.009	***
	(0.003)		(0.003)		(0.003)	
$(S_{i,t}^{RF} - B_{i,t}^{RF})$			0.035	***	0.027	***
			(0.002)		(0.002)	
$(S_{i,t}^{RF} + B_{i,t}^{RF})$			-0.026	***	-0.025	***
			(0.003)		(0.003)	
Additional buyer and seller controls	No		No		Yes	
Hedonic characteristics	Yes		Yes		Yes	
Neighborhood FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
N	55,619		55,619		55,619	
R^2	0.88		0.88		0.89	

Notes: This table shows the results of a set of OLS regressions with the log price of property i in year t as the dependent variable. $S_{i,t}^{NRF}$ (resp. $B_{i,t}^{NRF}$) is a dummy variable that equals one if the seller (resp. buyer) of the property is a non-resident foreigner. $S_{i,t}^{RF}$ (resp. $B_{i,t}^{RF}$) is a dummy variable that equals one if the seller (resp. buyer) of the property is a resident foreigner.

“Additional buyer and seller controls” are variables capturing gender, age, and marital status of the seller and the buyer. “Hedonic characteristics” are (log) floor level, (log) surface area (in m^2), dummy variables indicating the period of construction, and dummy variables indicating the presence of a parking place, an elevator, and a terrace. Standard errors are below the coefficients. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 8: Non-resident foreigners realize lower capital gains

	(1)		(2)		(3)	
S_{i,y_2}^{NRF}	-0.018 ***		-0.018 ***		-0.016 ***	
	(0.004)		(0.004)		(0.004)	
B_{i,y_2}^{NRF}	0.010 ***		0.010 ***		0.008 ***	
	(0.002)		(0.002)		(0.002)	
S_{i,y_2}^{RF}	0.000		0.000		-0.001	
	(0.002)		(0.002)		(0.002)	
B_{i,y_2}^{RF}	-0.004 ***		-0.004 ***		-0.003 **	
	(0.002)		(0.002)		(0.002)	
$Secondary_n$			0.090 ***			
			(0.023)			
$Education_n$			-0.002 ***			
			(0.000)			
Neighborhood FE	No		No		Yes	
$Y_1 \times Y_2$ FE	Yes		Yes		Yes	
N	34,297		34,231		34,297	
R^2	0.18		0.18		0.20	

Notes: This table shows the results of a set of OLS regressions with the annualized log return on property i between purchase year y_1 and sale year y_2 as the dependent variable. S_{i,y_2}^{NRF} and B_{i,y_2}^{NRF} (resp. S_{i,y_2}^{RF} and B_{i,y_2}^{RF}) are dummy variables that equal one if the seller or the buyer is a non-resident (resp. resident) foreigner. $Secondary_n$ equals the percentage of residences in neighborhood n that were used as secondary residences in 1990. $Education_n$ equals the percentage of adults with a higher education degree in the neighborhood in 1990. Standard errors are below the coefficients. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 9: Inflow of non-resident foreigners is correlated with higher returns

	(1)		(2)	
$Purchases_{n,y_1 \rightarrow y_2}^{NRF}$	0.002 **		0.002 **	
	(0.001)		(0.001)	
S_{i,y_2}^{NRF}	-0.020 ***		-0.020 ***	
	(0.005)		(0.005)	
B_{i,y_2}^{NRF}	0.011 ***		0.011 ***	
	(0.003)		(0.003)	
S_{i,y_2}^{RF}	-0.001		-0.002	
	(0.002)		(0.002)	
B_{i,y_2}^{RF}	-0.005 **		-0.005 **	
	(0.002)		(0.002)	
$Secondary_n$			0.085 **	
			(0.035)	
$Education_n$			-0.003 ***	
			(0.000)	
$Y_1 \times Y_2$ FE	Yes		Yes	
N	24,717		24,668	
R^2	0.14		0.14	

Notes: This table shows the results of a set of OLS regressions with the annualized log return on property i between purchase year y_1 and sale year y_2 as the dependent variable.

$Purchases_{n,y_1 \rightarrow y_2}^{NRF}$ equals the average annual number of purchases by non-resident foreigners in neighborhood n between y_1 and y_2 . S_{i,y_2}^{NRF} and B_{i,y_2}^{NRF} (resp. S_{i,y_2}^{RF} and B_{i,y_2}^{RF}) are dummy variables that equal one if the seller or the buyer is a non-resident (resp. resident) foreigner.

$Secondary_n$ equals the percentage of residences in neighborhood n that were used as secondary residences in 1990. $Education_n$ equals the percentage of adults with a higher education degree in the neighborhood in 1990. Standard errors are below the coefficients. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Table 10: Inflow of non-resident foreigners does not cause higher returns

	(1)		(2)	
	Step 1	Step 2	Step 1	Step 2
$Purchases_{n,y_1 \rightarrow y_2}^{NRF}$		-0.007 (0.005)		-0.007 *** (0.003)
$Share_{a,y_1 \rightarrow y_2}$	1.569 *** (0.046)		-1.484 *** (0.087)	
$Share_{a,y_1 \rightarrow y_2} \times Secondary_n$			31.892 *** (0.778)	
Other controls	Yes	Yes	Yes	Yes
N	23,472	23,472	23,472	23,472
R^2	0.40	0.12	0.44	0.12

Notes: This table shows the results of a set of 2SLS instrumental variable regressions with the annualized log return on property i between purchase year y_1 and sale year y_2 as the dependent variable in the second step. $Purchases_{n,y_1 \rightarrow y_2}^{NRF}$ is the dependent variable in the first step, and equals the average annual number of purchases by non-resident foreigners in neighborhood n between y_1 and y_2 . $Share_{a,y_1 \rightarrow y_2}$ equals the predicted inflow of non-resident foreigners in a district between y_1 and y_2 based on the total aggregate inflow of non-resident foreigners in Paris over the same period and the year-1982 geographical distribution of nationalities over the different districts. More information on the construction of this instrument can be found in the text. $Secondary_n$ equals the percentage of residences in neighborhood n that were used as secondary residences in 1990. “Other controls” are the other variables included in specification (2) in Table 9. Standard errors are below the coefficients. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.