A Tale of Two Cities

Paris and Nice Housing Demand and Supply Decomposed Through the 2022 Credit Shock

Irina Chernikova
La Ressource Pro · October 2026

ABSTRACT

Between the fourth quarter of 2021 and the fourth quarter of 2023 the rate on a new French home loan rose from 1.12% to 3.52% and the amount a household could borrow fell by a fifth. Paris apartment prices fell 8% and Nice apartment prices rose 7% over the same window, while both cities lost about a quarter of their sales. This report uses an estimated demand and supply model of the French existing-home market, a four-quadrant valuation model and a panel of 947 local markets to break the shock into its parts. The credit shock removed the same share of leveraged buyers in both cities; the price outcome was decided by who remained. In Paris the marginal buyer still needed a mortgage, so the required yield rose with the rate and the price fell until affordability was restored. In Nice the marginal buyer was potentially financed with equity or other means, the required yield did not move, sellers withdrew rather than cut, and the market cleared at a higher price on a fraction of the volume.

Keywords: housing demand and supply, mortgage rates, instrumental variables, DiPasquale-Wheaton, principal component analysis (PCA), Paris, Nice

1. Introduction

Between late 2021 and late 2023, the mortgage rate on a new French home loan tripled and what households could borrow fell by a fifth. Yet, if you had bought an apartment in Paris at the end of 2021, you would have lost about 8% on paper by the end of 2023. Had you bought in Nice, you would be up 7% over the same period. In the fourth quarter of 2021 the French mortgage rate was 1.12%; by the last quarter of 2023 it had risen to 3.52% (figures 1, 2 and 3).

Figure 1

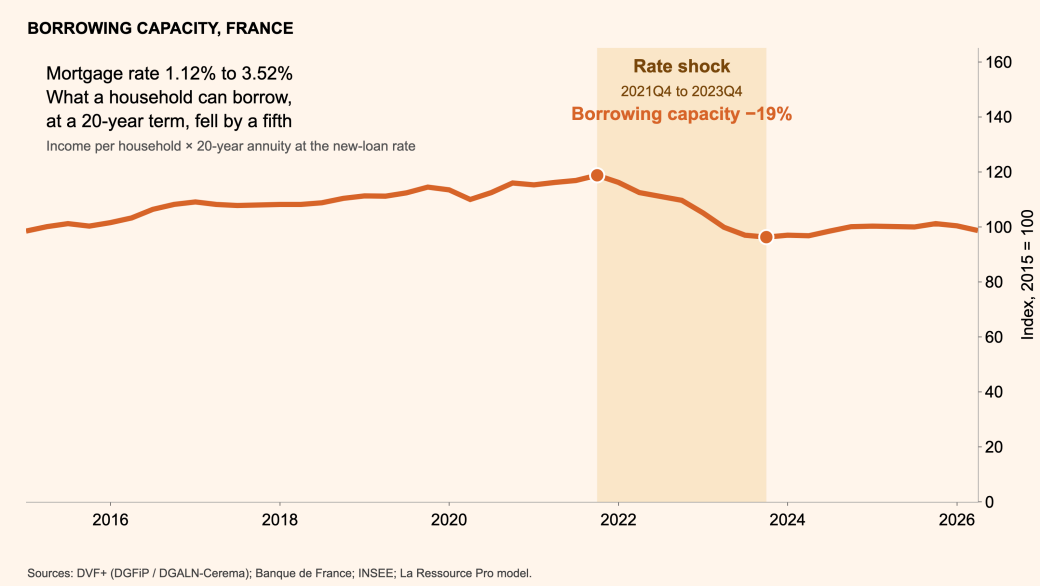


Figure 2

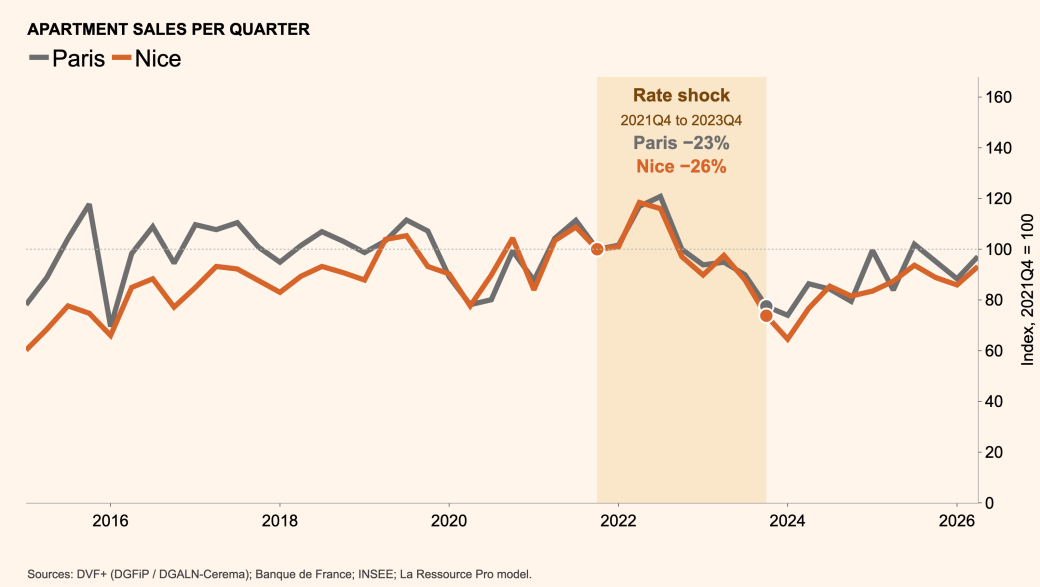
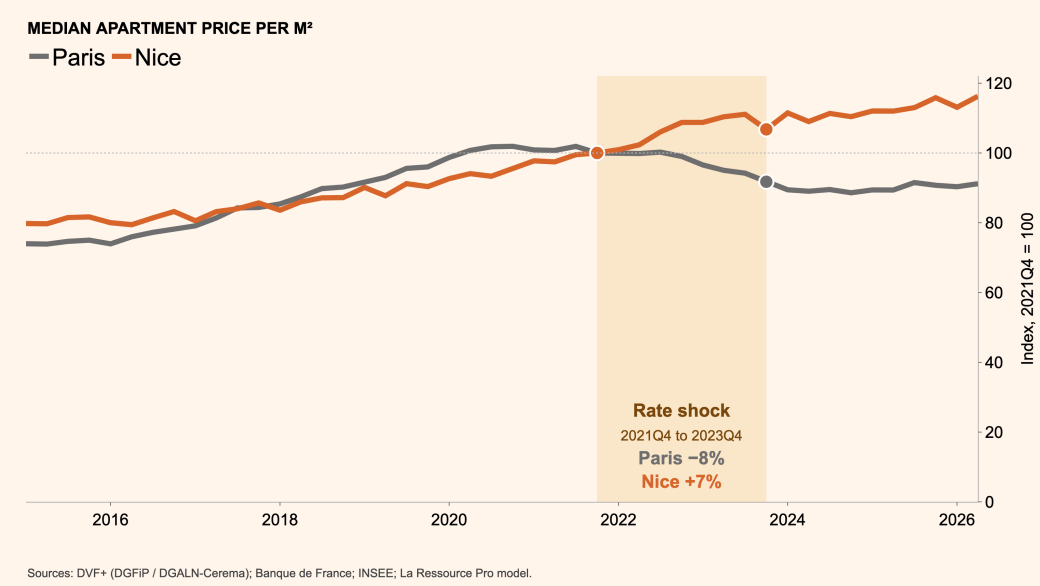


Figure 3



Everyone expects rising rates to push house prices down and sales to fall, but an econometric model can break the mechanism down and show what really happens when a shock hits a market. I estimated a demand and supply model of the French existing-home market, and the results show that rates do not move prices. Rates move buyers, and prices move according to the kind of buyer who remains. In terms of market value, Paris repriced and Nice held value: two cities absorbed the same shock in opposite ways. In Paris, prices fell as much as borrowing capacity, so a buyer's position barely changed. In Nice, prices rose while credit tightened, so the same buyer was 16% worse off (table 1) and still bought at that price.

Table 1

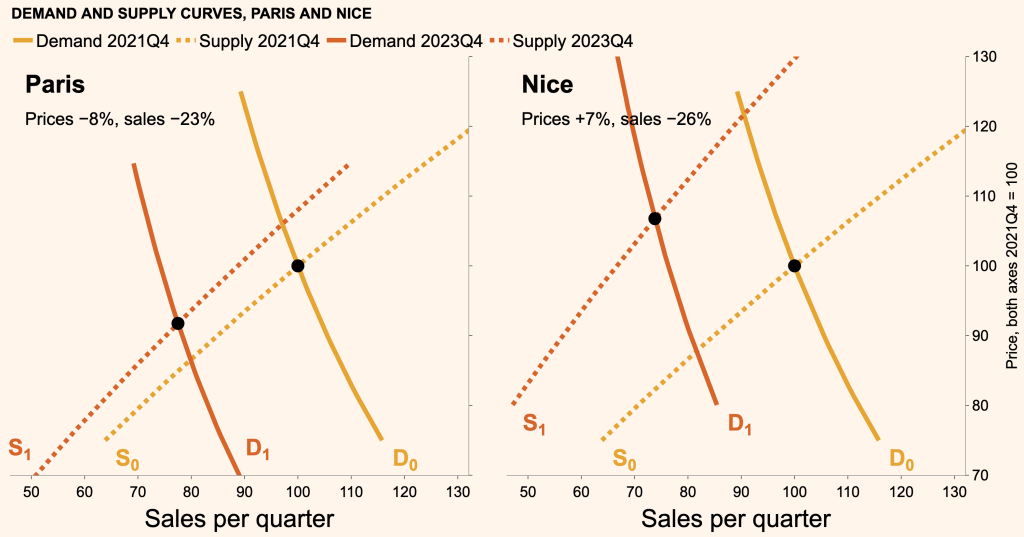
PARIS AND NICE APARTMENTS, 2021Q4 TO 2023Q4

	Paris	Nice
Mortgage rate	1.12% to 3.52%	1.12% to 3.52%
Borrowing capacity	−19%	−19%
Price, EUR/m2	10,743 to 9,857 (−8%)	4,286 to 4,576 (+7%)
Sales per quarter	7,640 to 5,920 (−23%)	2,060 to 1,520 (−26%)
Real price change	−17%	−3%
Affordability for a buyer	about zero	16% worse

2. Quantity

The credit shock removes some of the mortgage buyers from the market. What happens to the price depends on the buyers and sellers who remain. Figure 4 shows the estimated demand and supply curves. The curves share the national slopes, but their positions are each city's own data. In both cities the solid demand curve moves left by about the same distance, 26% in Paris and 24% in Nice at the 2021Q4 price; the distance of the demand shift is the buyers who left the market, the mortgage buyers. The difference is the dotted supply curve. In Paris it moved about a third as far as in Nice (11% against 33% at the 2021Q4 price), so the price absorbed the shock. In Nice the supply curve jumped, because owners withdrew their apartments from the market rather than cut the price. Nice cleared higher on a fraction of the volume.

Figure 4



The intuition that Nice demand is more equity-financed and that Nice sellers are discretionary holds up in the data. Second homes are 14% of the dwelling stock in Nice against 10% in Paris (table 2). Non-resident foreign buyers were 5% to 7% of purchases in the Alpes-Maritimes, and dollar and Swiss-franc buyers were 8% to 13% richer in euros in 2022 and 2023 than in 2021. These buyers lost little purchasing power when French mortgage rates rose. The estimated model says that the supply response to price is far larger than the demand response (national slopes +1.6 against −0.5), so a credit shock should clear through quantity, not price. Nice follows that rule and Paris is the exception, and the reason for the exception is the seller side.

Table 2

SECOND HOMES, FOREIGN BUYERS AND EXCHANGE RATES

	Paris	Nice / Riviera
Second homes, share of dwellings	10%	14%
Non-resident foreign buyers, share of purchases	1.3 to 1.8% France, 2021-22	5 to 7% Alpes-Maritimes, 2017-20
Euro value of a US dollar, 2022 / 2023 vs 2021		+13% / +9%
Euro value of a Swiss franc, 2022 / 2023 vs 2021		+8% / +11%
Euro value of a pound sterling, 2022 / 2023 vs 2021		+1% / −1%

Sources: INSEE, population census (dwellings by category, P22; Paris = 20 arrondissements, Nice = commune); Notaires de France, Les etrangers non-residents sur le marche immobilier francais (BIEN/Perval); ECB reference exchange rates via DBnomics, annual averages; La Ressource Pro.

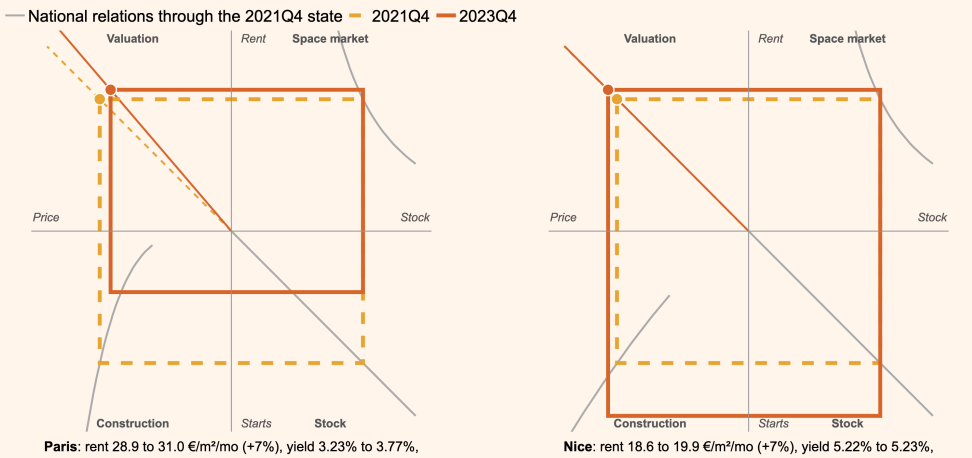
3. Price

Table 1 shows that the price per square meter fell in Paris, and the real price dropped 17%, so affordability was about unchanged. In Nice the median price per square meter appreciated, which after inflation is a 3% fall. For a buyer who needed a mortgage, affordability fell: the same buyer was about 16% worse off, and a quarter of those buyers left the market.

The DiPasquale-Wheaton four-quadrant chart in figure 5 shows where the shock landed and the mechanism behind it. Rents rose 7% in both cities, so the top-right quadrant tells the same story. The difference is the valuation ray in the top-left. Paris buyers raised the yield they demand from 3.2% to 3.8%, so the same rent was worth 14% less; with rents up 7%, the price came out 8% lower. Nice buyers demanded the same 5.2% as before, so the rent increase passed straight into the price. A mortgage buyer prices an apartment off the cost of the loan. An equity buyer prices it off the alternative uses of cash, and those had not moved by 2023.

Figure 5

FOUR-QUADRANT HOUSING SYSTEM, PARIS AND NICE



Paris: rent 28.9 to 31.0 €/m²/mo (+7%), yield 3.23% to 3.77%, price 10,743 to 9,857 €/m² (−8%)

Nice: rent 18.6 to 19.9 €/m²/mo (+7%), yield 5.22% to 5.23%, price 4,286 to 4,576 €/m² (+7%); starts 2023Q4 ×2.8, drawn at the edge

Sources: DVF+ (DGFiP / DGALN-Cerema); Banque de France; INSEE; La Ressource Pro model.

The affordability story and the yield story are the same fact seen from the two sides of the table (figure 6). Affordability is the mortgage buyer's view of the price. The yield in the four-quadrant chart is the asset buyer's view of the same price. In Paris the marginal buyer was still a mortgage buyer: the market's required yield rose with the mortgage rate, the price fell until the mortgage buyer could afford it again, and affordability closed back to zero. In Nice the marginal buyer was no longer a mortgage buyer: the required yield did not move, the price held, and affordability for the mortgage buyer stayed 16% worse

(figure 7). Those buyers left, which is the 26% fall in sales. In a leveraged, resident, landlord-heavy market, prices absorb the shock. In an equity-financed, second-home market, volumes absorb it and prices hold until the shock reverses.

Figure 6

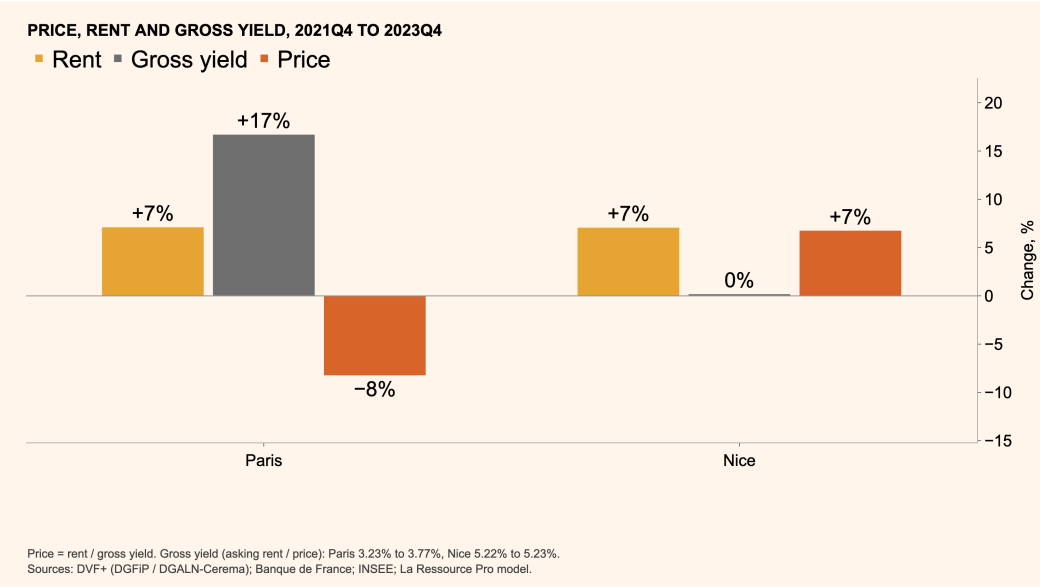
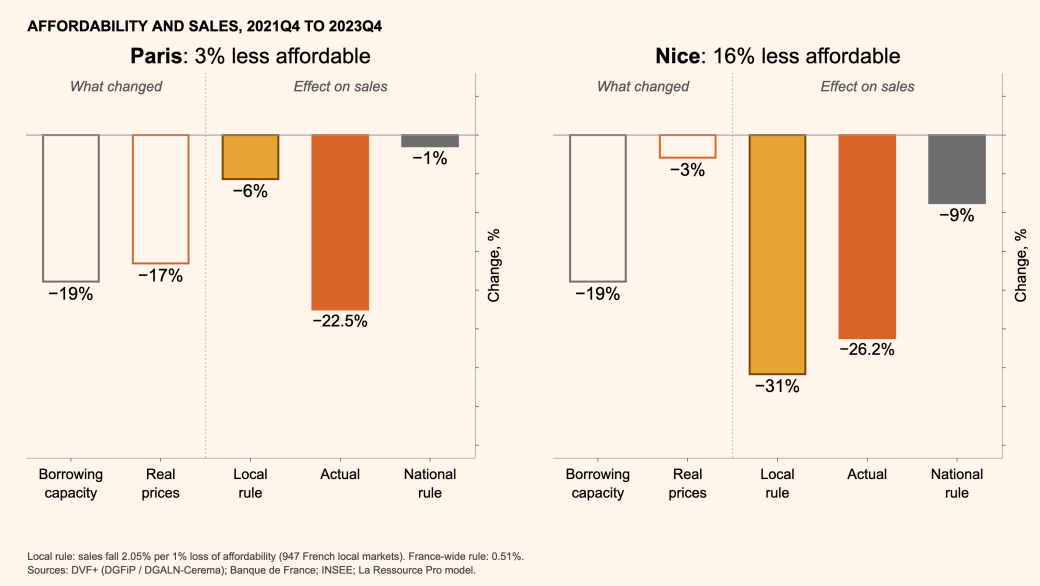


Figure 7



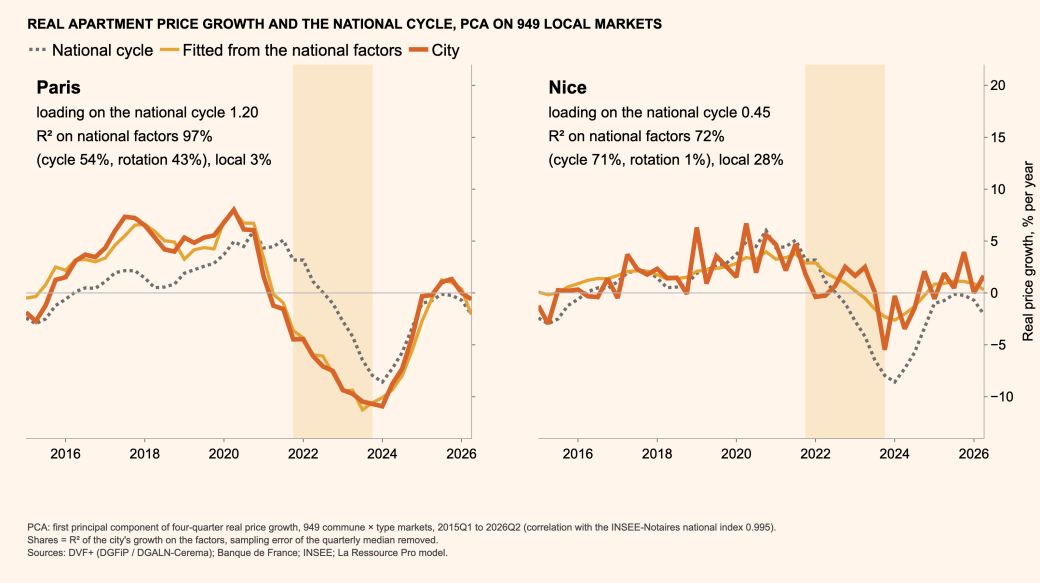
4. Strengths and Limitations

What the econometrics shows is that a credit shock removes a fraction of the leveraged buyers, so the quantity demanded shifts. The buyers and sellers who remain in the market are more discretionary. If the sellers are not squeezed to sell, they hold their inventory. If the buyers can afford higher rates or have cash, they continue to buy. Those are the buyers who, in the end, push the prices up.

Econometric modeling separates effects that a market average mixes together, and that removes two possible biases here. First, the model uses a hedonic index for Nice, which holds size, rooms and location fixed (Paris uses the INSEE-Notaires index, built the same way). Without that control, what happened in Nice could have been a unit-mix effect: large apartments sold to wealthy buyers would lift the median. Because the index strips out the mix, the Nice result is a real price move, not a push from the luxury end of the market. Second, the model rules out the idea that Nice buyers simply do not care about rates. The response of sales to borrowing capacity is about the same size in both cities, 1.7% per 1% in Paris and 1.9% in Nice, so that was not the case either.

The two demand slopes used in this report were not derived from Paris and Nice alone, but from France as a whole and on a panel of 947 French local markets. The demand and supply curves in figure 4 use the national slopes estimated on France as a whole from 2002 to 2026; the curves on the La Ressource Pro Lab pages share the same slopes for the same reason. The affordability rule in figure 7 uses the demand slope estimated on a panel of 947 French local markets (commune by property type) over 2015 to 2026, which is steeper (−2.05) because it measures how buyers move between local markets rather than how the whole country moves at once. The mechanisms behind the Nice result, equity buyers and sellers who withdrew rather than cut prices, are consistent with the data but not estimated from the model. What the data also show is how much each city moves with France. Across 949 French local markets, the first principal component of real price growth is the national cycle: it correlates 0.995 with the INSEE-Notaires national index. A second component separates expensive cities from resort and cheaper markets. Regressing each city's real price growth on these two factors, and removing the sampling error of the quarterly median, the two national factors explain 97% of the variance of Paris price growth (54% the national cycle, 43% the rotation between expensive cities and resort markets) and the national cycle alone explains 71% of Nice's (figure 8). Paris is France with a higher price tag, so a national rule is nearly a Paris rule. Nice is another market, which is why its story has to be told through its buyers rather than through a slope.

Figure 8



If every buyer needed a mortgage, how many sales should each city have lost? The panel slope answers that: multiply the loss of affordability by 2.05 and you get the volume drop a mortgage-financed market would have shown. Nice, 16% less affordable, predicts −31% against −26% recorded: Nice lost fewer sales than a fully mortgage-financed market would have, and the gap is the room the equity buyers filled. Paris, about 3% less affordable, predicts −6% against −23% recorded, so affordability explains little of the Paris drop (figure 7). Paris buyers left for reasons the affordability rule does not carry: the stricter loan rules that became binding in 2022, and waiting for prices to fall further. That asymmetry is the quantitative version of "who was left in the market".

5. Conclusion

1. **Rates do not move prices; they move buyers.**
   The credit shock took the same share of leveraged buyers out of Paris and Nice, and the two markets lost about the same share of their sales. The price was decided by those who stayed. In a leveraged, resident, landlord-heavy market like Paris, expect prices to absorb the shock: the marginal buyer still needs a loan, the required yield follows the mortgage rate, and the price adjusts until that buyer can afford the home again. In an equity-financed, second-home market like Nice, expect volumes to absorb the shock and prices to hold: the marginal buyer prices off cash alternatives, sellers are under no pressure, and the market thins out at the old price.

2. **The Nice outcome was potentially made by buyers with equity or other means, that buyer base holds the Nice price up and exposes it.**

   For a buyer with cash, a market that holds its price through a credit shock offers no discount; the discount was in Paris, where the marginal buyer is leveraged and the price did the adjusting. Whether the Nice price is a floor or a ledge depends on the buyers who set it. It holds as long as the alternatives to cash, foreign rates and the euro, stay where they were. If those move against the equity buyer, Nice has the price adjustment still ahead of it that Paris has already made. The model cannot say which; it can say that the Nice price rests on a narrower base of buyers than before, and that a narrow base is what makes an opportunity and an unfinished price adjustment look the same.

3. **Recovery arrives in a different form in each city.**

   The panel estimate behind figure 7, sales move about 2.05% for each 1% change in affordability across 947 French local markets, applies to gains in affordability as well as losses. As credit returns and affordability improves, Nice recovers in volume at its price level, because the buyers who left were the mortgage buyers that estimate describes. Paris has already taken its price cut, so its recovery arrives in volume first and in price only once the mortgage buyer is back. By early 2025, as the new-loan rate eased from 3.6% toward 3%, Paris sales were back at their 2021Q4 pace while Nice sales were still about a sixth below. Since the start of 2026 the rate has edged back up, to 3.2% by August. If rates rise further, Nice is expected to adjust on volume and Paris on price.

4. **What the model adds.**

   A mortgage-rate shock is exogenous to a city's housing market: the rate is set by monetary policy and bank funding costs, not by Paris or Nice sales, so a change in borrowing capacity moves city demand without being moved by it. The model can therefore read the shock as a cause and trace its effects, which is what makes this window a clean test of a structural model. The model separates the part of the outcome that any French market would have shown (the demand shift, the national cycle) from the part that is the city's own (the supply response, the required yield, the buyer base). A −8% change in price in Paris and +7% in Nice say the two cities are different. The model says in what way, by how much, and what has to change for the answer to change.

A. Appendix

A.1 The demand and supply equations

Both equations are estimated by two-stage least squares on four-quarter log differences of national quarterly series, with standard errors robust to heteroskedasticity and autocorrelation (Newey-West, bandwidth 4). Lowercase letters are natural logs and Δ_4 is the change on the same quarter a year earlier.

$$\text{Demand:}\quad \Delta_4 q_t = \alpha_0 + \alpha_1 \Delta_4 (p_t - bc_t) + \alpha_2 \Delta_4 U_t + \varepsilon_{D,t}$$

$$\text{Supply:}\quad \Delta_4 q_t = \gamma_0 + \gamma_1 \Delta_4 p_t + \gamma_2 \Delta_4 c_t + \gamma_3 \Delta_4 s_{t-4} + \gamma_4 \Delta_4 r_t + \gamma_5 \Delta_4 U_t + \varepsilon_{S,t}$$

q existing-home sales (12-month total); *p* real existing-home price index; *bc* real borrowing capacity per household (income per household times the 20-year annuity factor at the new-loan rate); *U* unemployment rate; *c* real construction cost index; *s* housing starts (12-month total); *r* real mortgage rate. Demand instruments: construction cost and lagged starts. Supply instruments: real household income, the ECB policy rate and the Bank Lending Survey balance of loan demand for house purchase, lagged one quarter.

Table A1. Demand equation, France, 2002Q4 to 2026Q2 (n = 95)

REGRESSOR	COEFFICIENT	STD. ERROR	P-VALUE
Δ_4 (ln P − ln BC), affordability	−0.513	0.489	0.294
Δ_4 unemployment (pp)	−0.105 ***	0.035	0.003
Constant	0.010	0.021	0.641
R^2 0.15; first-stage F 13.1; Sargan p 0.91; weak-instrument-robust 95% set for the affordability slope [−2.20, +0.48]			

Table A2. Supply equation, France, 2004Q2 to 2026Q2 (n = 89)

REGRESSOR	COEFFICIENT	STD. ERROR	P-VALUE
Δ_4 ln P, real price	+1.555 ***	0.414	0.000
Δ_4 ln construction cost	−1.138 **	0.527	0.031
Δ_4 ln starts (t − 4)	−0.292 **	0.120	0.015
Δ_4 real mortgage rate (pp)	−0.032 ***	0.007	0.000
Δ_4 unemployment (pp)	−0.045 **	0.020	0.024
Constant	−0.010	0.015	0.508
R^2 0.58; first-stage F 19.1; Sargan p 0.77; weak-instrument-robust 95% set for the price slope [+0.62, +2.52]			

Table A3. City credit channel and the panel demand slope

EQUATION	REGRESSOR	COEFFICIENT	STD. ERROR	P-VALUE
Paris credit channel, OLS, 2016Q1 to 2026Q2 (n = 42), R^2 0.26	Δ_4 ln borrowing capacity, France	+1.678 ***	0.397	0.000
	Δ_4 unemployment (pp)	−0.018	0.050	0.716
Nice credit channel, OLS, 2015Q1 to 2026Q2 (n = 46), R^2 0.46	Δ_4 ln borrowing capacity, France	+1.910 ***	0.353	0.000
	Δ_4 unemployment (pp)	−0.030	0.045	0.502
Panel demand, 2SLS with unit fixed effects, 947 commune by type units, 2015Q1 to 2026Q2 (n = 43,559)	Δ_4 (ln P − ln BC), affordability	−2.045 ***	0.229	0.000
	Δ_4 France unemployment (pp)	−0.095 ***	0.017	0.000
	Δ_4 département unemployment (pp)	+0.010	0.014	0.477
Panel: first-stage F 142.7, Hansen J p 0.18 (cluster-robust over-identification test; Sargan, which treats every market-quarter as independent, gives 0.000), standard errors clustered by département (93 clusters), instruments construction cost and département starts (t − 4). Credit channel: reduced form, the response of city sales to national credit conditions with price not held fixed; both regressors are national and exogenous to the city.				

Significance: *** p < 0.01, ** p < 0.05, * p < 0.10. The city-level versions of the two structural equations were estimated and are not identified on one rate cycle: Paris demand first-stage F 0.0; Paris supply first-stage F 39 but Sargan p 0.003 (the instruments contradict each other); Nice demand F 0.7 with Sargan p 0.01; Nice supply F 1.5. This is why the curves in figure 4 use the national slopes and the affordability rule in figure 7 uses the panel slope.

A.2 Actual against model-implied sales and prices

Figure A1

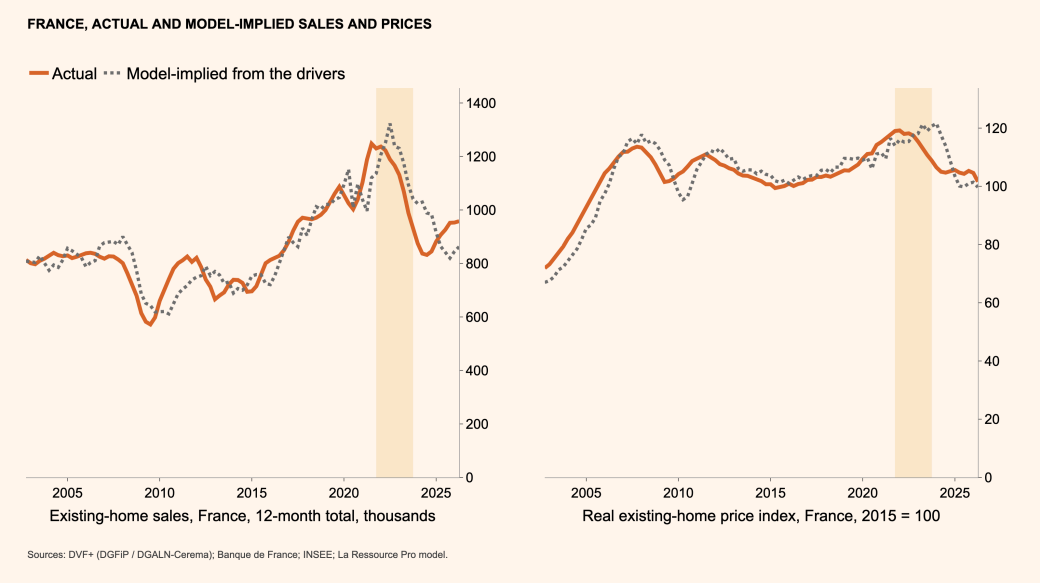
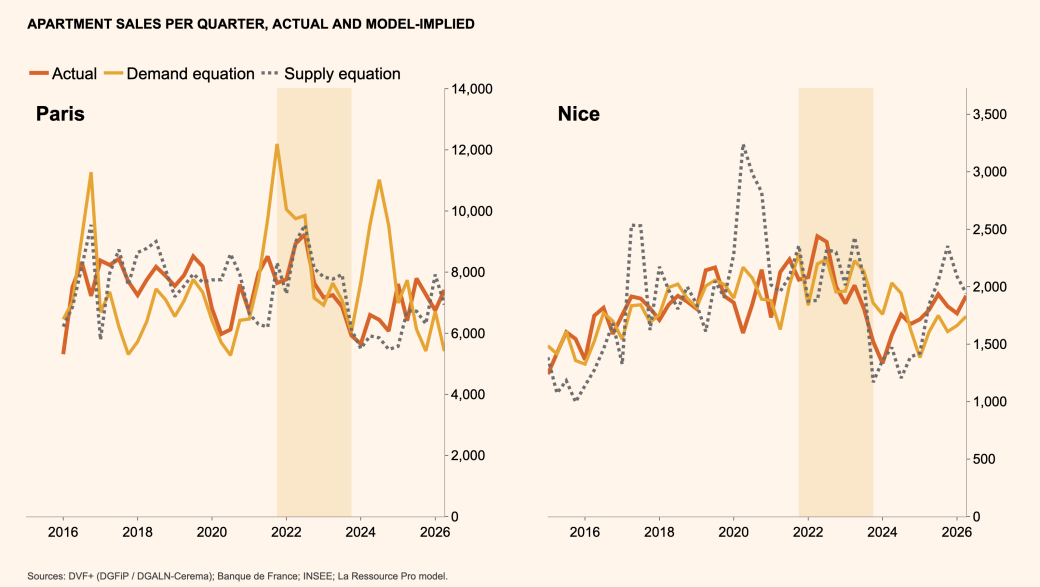


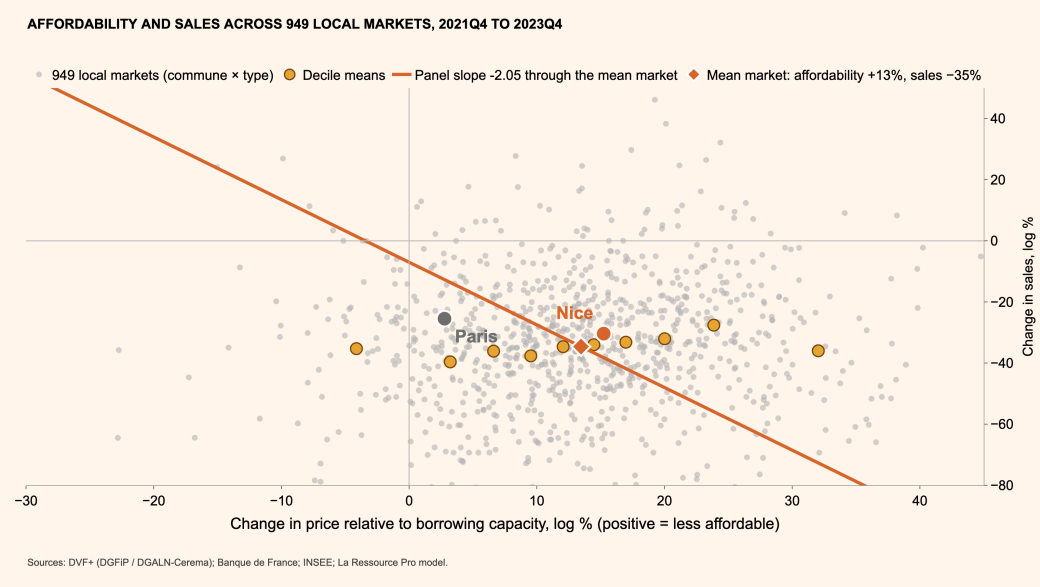
Figure A2



A.3 The panel slope across the local markets

Figure A3 plots the 2021Q4 to 2023Q4 window for each of the 949 local markets of the price panel (the 947 markets of table A3 plus two that pass the price screen but not the sales screen): the change in price relative to borrowing capacity on the horizontal axis and the change in sales on the vertical axis, both in log percent, with the decile means of the cloud and the two cities placed with the numbers of figure 7. The window is dominated by a common movement: 92% of the markets became less affordable and 94% lost sales, the mean market by 14% and 35%. Across markets within this single window the two changes are nearly unrelated (correlation 0.08): the loss of sales was national, and the differences in affordability between markets explain little of the differences in their sales. The panel slope of table A3 is not estimated from this cross-section. It comes from the movement of each market over its own 46 quarters, with market fixed effects and the construction-cost and starts instruments, and is drawn here through the mean market only to show the gradient it implies. Read together with figure 7, the chart says what the main text says: the affordability loss more than accounts for the Nice sales drop and accounts for little of the Paris drop, and the part it does not account for was common to almost every French market.

Figure A3



A.4 Principal components of local price growth

The national cycle in figure 8 is the first principal component of the four-quarter change in the real median price per square meter of the same 949 commune and property-type markets, 46 quarters from 2015Q1 to 2026Q2, standardized per market.

The analysis is descriptive: it identifies neither demand nor supply and changes no slope or curve. Table A4 gives the factor statistics and the loadings of the two cities.

Table A4. Principal component analysis, 949 local markets, 2015Q1 to 2026Q2

STATISTIC	VALUE
Share of variance, components 1 to 5	24.1%, 5.2%, 3.8%, 3.5%, 3.4%
Number of factors selected, Bai-Ng ICp2 / eigenvalue ratio (ratio at k = 1: 4.6)	1 / 1
Factors retained (the second is descriptive: market type explains 56% of its loadings)	2
Correlation of component 1 with the four-quarter change of the real INSEE-Notaires national index	0.995
Sampling error of the quarterly median, share of raw variance of market price growth (split-half calibration ratio 1.01 over 47,435 market-quarters)	71%
Split of true (noise-free) variance across all markets: national cycle / rotation / local	64% / 15% / 22%
Paris, 20 arrondissement units, sales-weighted: loading on the cycle / on the rotation	1.20 / −1.07
Paris, R^2 of real price growth on the two factors: cycle / rotation / local	54% / 43% / 3%
Nice, apartment unit: loading on the cycle / on the rotation	0.45 / 0.03
Nice, R^2 of real price growth on the factors: cycle / rotation / local	71% / 1% / 28%

Component 1 on sub-panels (apartments only, houses only, markets with at least 100 or 250 sales a quarter) correlates 0.96 to 0.99 with the full-panel component. Loadings on the cycle rise with the 2015 price level and fall with the second-home share and on the Mediterranean coast; loadings on the rotation rise with the second-home share and fall with the price level (R^2 0.32 and 0.56 across the 947 markets).

A.5 Sources

- DVF+ open data, DGFiP / DGALN-Cerema, edition 2026-2: every property transaction in France since 2014; the Paris and Nice apartment sales, prices and hedonic indices.
- INSEE-Notaires existing-home price indices (national and Paris apartments); IGEDD (CGEDD) 12-month existing-home sales counts.
- ECB via DBnomics: MFI interest rate on new housing loans in France (compiled by the Banque de France), ECB main refinancing rate; ECB Bank Lending Survey, loan demand for house purchase; ECB reference exchange rates via DBnomics.
- Eurostat: unemployment. INSEE: household gross disposable income (quarterly accounts), consumer price index, construction cost index (ICC), household counts, population census 2022 (dwellings by category, for the second-home shares).
- SDES, Sitadel: housing starts, national and by département. ANIL / DGALN, Carte des loyers, and the Observatoires des loyers: asking and observed rents for the four-quadrant chart.
- Notaires de France, *Les étrangers non-résidents sur le marché immobilier français* (BIEN / Perval): non-resident foreign buyer shares, France 2021 to 2022 and Alpes-Maritimes 2017 to 2020.
- Model estimates and interactive versions of figures 4, 5, 7 and 8: La Ressource Pro Lab, laressource.pro/lab/housing-paris.html and laressource.pro/lab/housing-nice.html.