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The housing supply and demand mismatch and its relationship with house prices

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Rationale

Analysis of recent housing supply and demand trends, and of the factors contributing to them, is extremely useful to detect the emergence or existence of imbalances in the housing market, which is characterised by long lead times for house building.

Takeaways

- After the initial impact of the pandemic, the recovery in demand for owner-occupied housing nationwide has outpaced the recovery in supply, which is less flexible in the short term. This has led to a certain mismatch between supply and demand and to upward pressures on house prices.
- In recent years, there has also been a widespread supply shortage at the regional level. The prices of owner-occupied housing have risen more in regions where housing has been in relatively shorter supply.
- Although the cost of credit has risen, house prices will foreseeably continue to show greater downward stickiness, in nominal terms, than residential housing market variables such as house sales or building permits, owing to the dearth of new construction work, the high costs of building materials and the favourable financial situation of the different housing market agents.

Keywords

Housing supply, housing demand, house prices.

JEL classification

R31, R21, D12.

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Introduction

The housing market has certain particularities that distinguish it from other goods and services markets. First, the housing stock existing at any particular time is rigid in the short term, because a relatively long period elapses between a decision being taken to develop residential housing and it reaching the market. Specifically, it can often take several years for the urban development work to be completed. Additionally, for apartment housing, the time elapsed between obtaining the building permit and completing the construction work is generally no less than 18 months.

Second, the housing stock is very heterogeneous, which means that demand is influenced by changes in household preferences for one type of housing or another. Third, housing is conditioned by the fact that it is immovable property, i.e. it is both physically and legally inseparable from the land on which it is built, which means that residential property markets have a local scale.

In this setting, the housing supply available to meet demand at any given time can be defined as completed new housing plus second-hand housing on sale. In turn, demand is determined by a range of real and financial factors and, by contrast with supply, can fluctuate more in the short term. Specifically, demand for principal dwellings is directly linked to changes in household numbers. Moreover, demand for both principal dwellings and second homes depends on house prices, households' disposable income and, if the purchases are made by credit, interest rates and all other financing conditions (such as the loan-to-value ratio and loan term).

The economic shocks experienced over the last three years have had a huge impact on several of the determinants of housing supply and demand. This article examines the influence these factors have had on recent developments in the owner-occupied residential property market in Spain:[1] first at the national level, and subsequently for a narrower geographical area (the Spanish regions) because, as indicated earlier, the spatial dimension is important here. Lastly, the article discusses the possible effect of more recent developments (specifically, tighter financial conditions), illustrated using an empirical exercise.

Developments at the national level

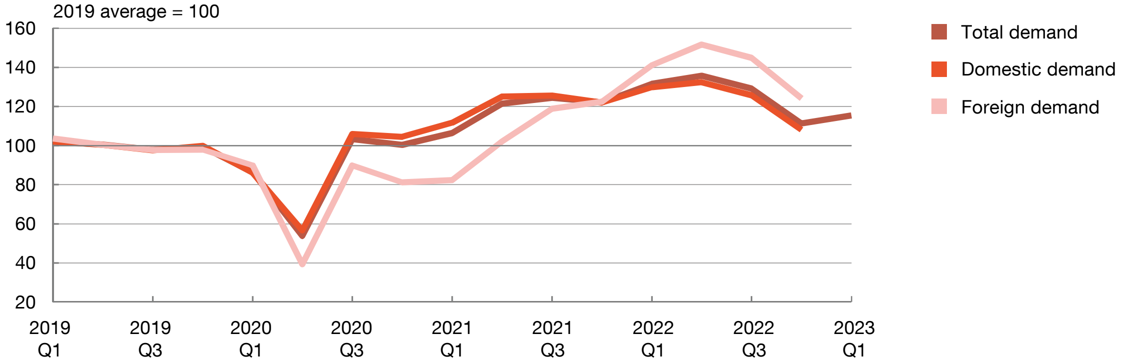
The gradual easing of restrictions post-lockdown led to a sharp recovery in housing demand, driven by the materialisation of house purchase decisions that had been postponed at the start of the pandemic (pent-up demand) (see Chart 1.a). The resurgence in house sales observed throughout 2021 and 2022 was underpinned by the improvement in activity and agents'

1 The article does not analyse rental market supply or demand because the official statistics available are less complete than for the owner-occupied housing market.

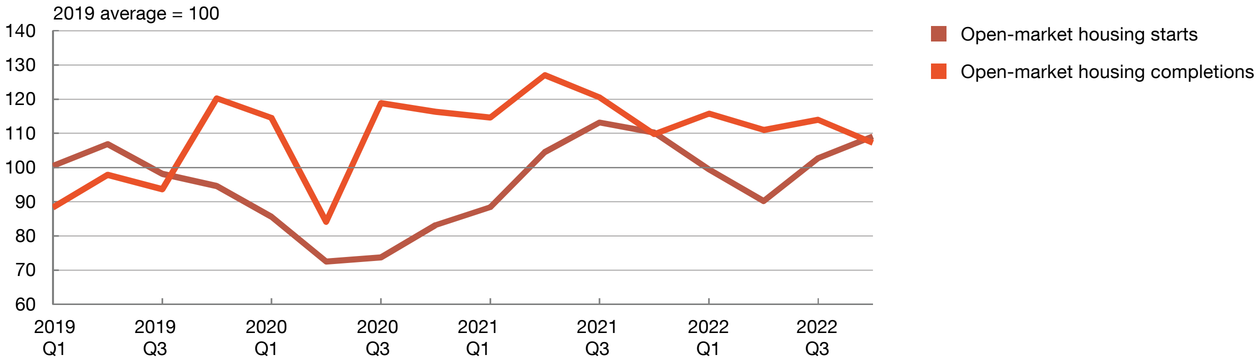
Chart 1

After the initial impact of the pandemic, housing demand recovered faster than supply

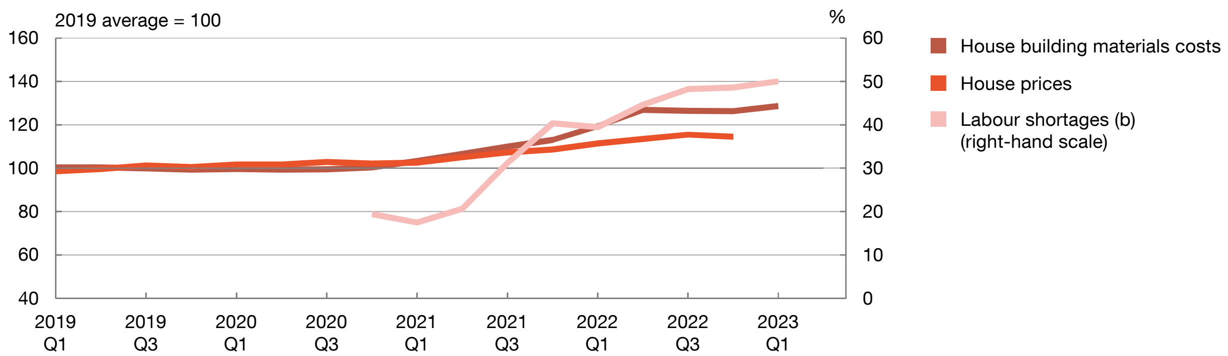
1.a The pent-up demand accumulated in the early stages of the health crisis drove up house sales, first to Spanish and then to foreign buyers (a)



1.b By contrast, the supply of new housing initially recovered more slowly, and has remained at historically low levels (a)



1.c All in a setting marked by high building materials costs and supply difficulties, and growing labour shortages



SOURCES: Banco de España, Centro de Información Estadística del Notariado and Ministerio de Transportes, Movilidad y Agenda Urbana.

a Series adjusted for seasonal and calendar effects. Last observation: 2022 Q4 (2023 Q1 for total house sales).
b Percentage of construction sector firms reporting a negative or very negative impact of this factor on their activity. Data from the Banco de España Business Activity Survey (EBAE).

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confidence once the most severe pandemic-related restrictions were lifted, the use of savings accumulated during the pandemic and the continuing historically low interest rate environment.[2]

Domestic demand was the first to recover, followed by foreign demand. By their socioeconomic characteristics, Spanish house buyers tended to be better educated, middle-aged (in the 30-49 age band) high-income households.[3] As for foreign buyers, the recovery in demand coincided with the lifting of the international travel restrictions, which enabled holiday home purchases – that had been virtually non-existent during the pandemic – to be resumed. There has also been a certain amount of emerging demand from teleworkers from other countries. As a result, in 2022 house sales to foreign buyers were 40% higher than in 2019 (the last year pre-pandemic).[4]

On the supply side, housing starts were historically low in the years preceding the pandemic. This was possibly owing to the lower migration flows compared with during the run-up to the global financial crisis, and also to the last phase of absorption of the unsold housing stock that had accumulated after the real estate bubble burst and that met the necessary characteristics (mainly in terms of location) to meet demand. During lockdown, construction work was temporarily halted and approvals of new building permits were delayed (see Chart 1.b). More recently, housing starts returned to their pre-pandemic levels, but were much slower in doing so, and subject to more fluctuations, than house sales. There is still a relatively short supply of new housing, which is also affected by the significant increase in the price of building materials and supply difficulties, and growing labour shortages (see Chart 1.c).[5] This relative shortage of new housing has given rise to a shift in demand towards second-hand housing, exerting pressure on prices in that segment.[6]

Meanwhile, during the pandemic the supply of second-hand housing was driven by the increase in inherited housing on sale, although in quantitative terms its impact is notably smaller than that described above affecting the supply of new housing as a whole. This development was also countered by the recovery in (domestic and foreign) tourism, leading to some houses being sold as holiday homes in certain local markets. Specifically, the growth in holiday homes as a proportion of the total housing stock has gained pace since the summer of 2021 (see Chart 2.a).

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2 The number of house sales is used to proxy housing demand. This variable is able to capture demand fluctuations as a result of changes in the determinants of demand earlier than other more structural indicators, such as potential demand estimates based on hypotheses as to future developments in net household formation and the factors that affect households' lifetime income levels, estimates which are also associated with greater uncertainty. Also, the number of transactions was preferred over the number of contacts per advertisement, as the latter is a less accurate proxy of actual demand and figures are not available for a sufficiently long period.

3 According to the responses given to one of the questions in the European Commission's consumer surveys (available up to 2023 Q2). Specifically, households are asked if they are planning to buy or build a property over the next 12 months. For the population groups indicated, the survey revealed, following the deterioration observed in the first quarters of the pandemic, a substantial recovery in this indicator, which has exceeded its pre-pandemic levels and is close to its highest level since 2007.

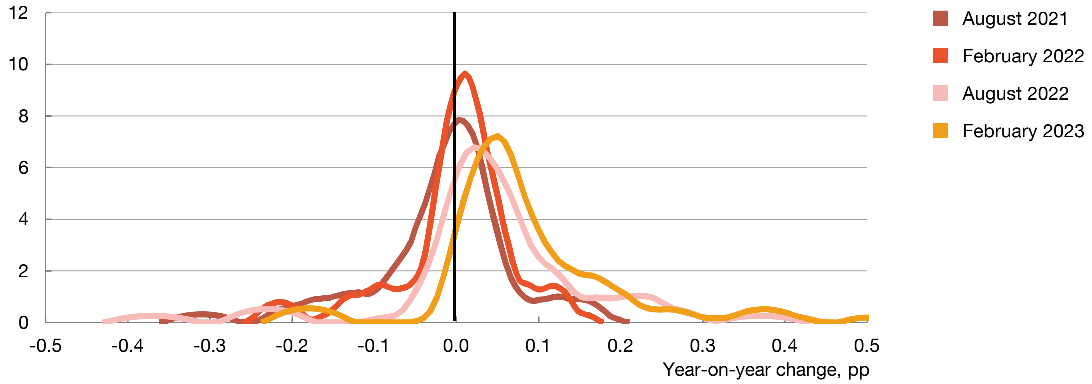
4 In addition, house sales to foreign buyers explained almost three-quarters of the increase in total sales between 2021 and 2022, a much higher proportion than that observed a year earlier (when it was close to 20%). House sales to foreign buyers rose from 16.9% of total sales in 2019 to 18.8% in 2022, after recording lower levels in 2020 (14.7%) and 2021 (15.3%).

5 In 2022 the number of open-market housing starts and completions fell by around 3% and 5%, respectively, to almost 97,000 and 80,000 units. These figures are well below their respective averages in the years 1991 to 2022 (slightly more than 240,000 units in both cases).

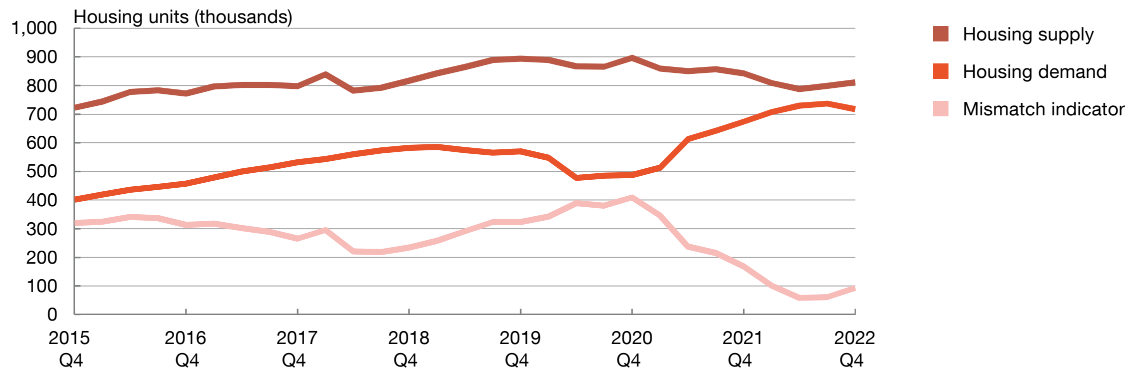
6 As a result of the pandemic, the share of second-hand house sales fell to 78.2% in 2021 Q1, its lowest level in recent years, but has since picked up again, standing at around 81% in 2023 Q1.

Chart 2
Housing supply has been insufficient to meet the relatively strong demand levels, exerting upward pressure on prices

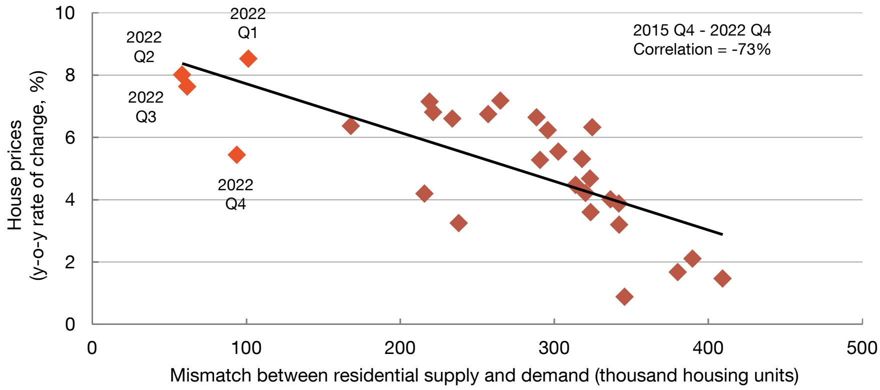
2.a Since summer 2021 holiday homes have grown as a proportion of the total, as shown by the distribution of their share of total homes by province. This has also contributed to the decline in the residential housing supply (a)



2.b As a consequence of these developments in residential housing supply and demand, since the pandemic there has been a certain mismatch between the two (b)



2.c There is a significant correlation between the housing supply and demand mismatch indicator and the increase in house prices (c)



SOURCES: Banco de España, INE, Ministerio de Transportes, Movilidad y Agenda Urbana and Tinsa.

a Drawing on province-level data and for each date indicated, the chart depicts the distribution of the changes in the number of holiday homes as a proportion of the total housing stock, compared with the same period of the previous year. Positive values on the horizontal axis denote a larger share than in the same period a year earlier.
b The housing supply comprises the net supply advertised on the leading real estate portals (a proxy for second-hand housing for sale) and completion certificates for the last four quarters (a proxy for new housing supply). The unsold new housing stock is not considered. Housing demand is proxied by house sales over the last four quarters. The mismatch indicator is the difference between supply and demand. Last observation: 2022 Q4.
c The chart sets out the correlation between the year-on-year rate of change of house prices and the housing supply and demand mismatch indicator, for the period from 2015 Q4 to 2022 Q4. The paler shaded diamonds depict 2022.

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As a result of these developments in supply and demand, since the pandemic there has been a certain degree of mismatch between the two, which tends to be more marked in more populated geographical areas. Chart 2.b shows an indicator that measures the degree of mismatch at the national level, calculated as the difference between two approximations of supply and demand. Specifically, supply is proxied as the stock of second-hand housing on sale (measured as the number of advertisements placed on the leading real estate portals, drawing on data compiled by Tinsa[7]) plus new housing completions accumulated over four quarters (measured by completion certificates). Demand is proxied by house sales (new and second-hand housing) accumulated over four quarters, drawing on notarial information.[8]

As the chart shows, this indicator suggests that the housing supply shortage has been relatively larger post-pandemic. On a broader time scale, since the recovery in the residential real estate market following the financial crisis, a significant correlation is observed at the national level between this indicator and the increase in house prices (see Chart 2.c). Specifically, 2022 saw the highest increase, in nominal terms, in house prices since 2007, and the greatest supply shortage of the entire period considered (which began in 2015).[9]

Despite the shortage of new housing supply, the unsold new housing stock, which declined significantly following the financial crisis, has remained virtually unchanged since 2018 (see Chart 3.a). This is probably because this stock is not a perfect match for the demand preferences that prevailed before the pandemic, or for those that have arisen since, such as for energy-efficient single-family homes or larger apartments with wide open spaces (see Chart 3.b).

Developments at the regional level

Given the nature of property, it is natural for any analysis of housing market developments to incorporate a regional perspective. However, the limited information available makes it difficult to perform a highly disaggregated geographical analysis, which ideally should be on a smaller scale than at municipality level. But it is possible to analyse the housing supply and demand mismatch since the pandemic, and its relationship to house prices, at the regional level, akin to the exercise conducted at the national level.[10]

7 This information, available since 2015 Q4, is provided after elimination of duplicate advertisements (when the same property is advertised on more than one portal).

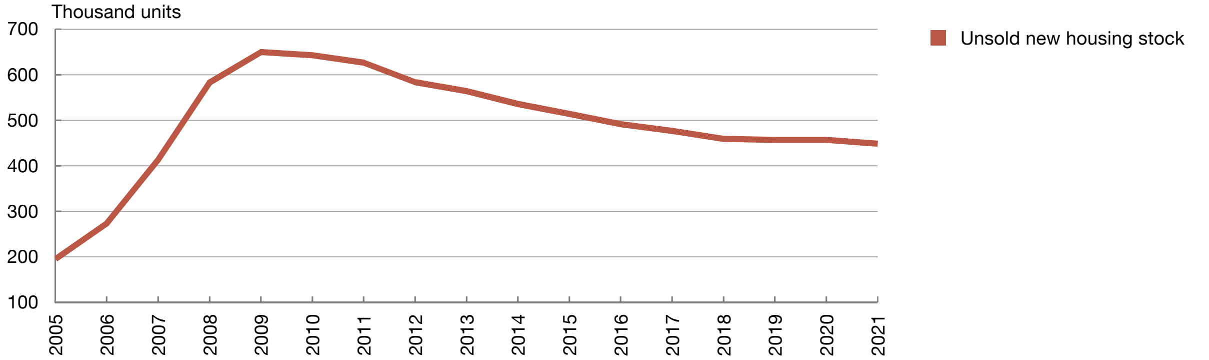
8 The unsold new housing stock is not considered, as it has remained virtually unchanged since 2018. The number of house sales over four quarters is used so as to obtain an annualised sales volume, which facilitates interpretation and is more comparable with the amount of housing available to meet actual demand in any one year.

9 Given the surge in inflation in the last two years, since end-2021, and for the first time since 2013, house prices have been falling in real terms, slightly more so in the second-hand housing segment. The real price of housing fell by 0.9% on average in 2022 (-1% in the case of second-hand housing and -0.4% in new housing).

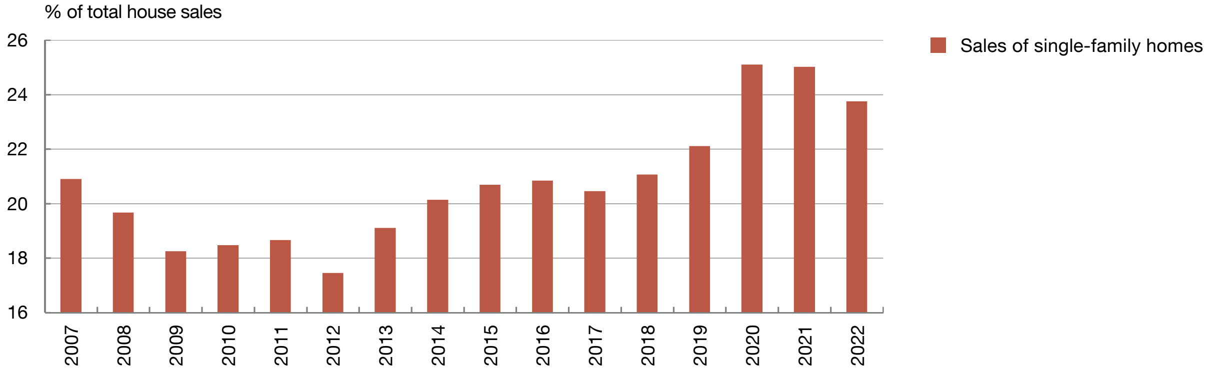
10 The supply of second-hand housing on sale in each region is proxied using the information available on the number of house sale advertisements published on the real estate portal Idealista since end-2020. When this information is aggregated at the national level, there is very little discrepancy with the Tinsa data used in the previous section (3% on average in the common period available for all datasets). The other supply and demand variables are proxied as indicated at the national level, that is to say, the supply of new housing as the number of completion certificates, and demand as the number of house sales.

Chart 3
There is a degree of mismatch between new housing stock accumulated in the past and households' post-pandemic needs

3.a Despite the shortage of new housing supply, the unsold new housing stock has remained virtually unchanged since 2018…



3.b … which suggests that this stock is not a perfect match for households' preferences pre-pandemic, or for those that have arisen since (for instance, for single-family homes)



SOURCES: Centro de Información Estadística del Notariado and Ministerio de Transportes, Movilidad y Agenda Urbana.

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As in Spain as a whole, each region *(Comunidad Autónoma)* has seen greater house price growth in the aftermath of the pandemic, in step with a higher relative supply shortage,[11] a relationship that has become stronger than in previous years (see Chart 4.a).[12] Indeed, compared with 2019, there was a greater relative supply shortage (proxied, in this case, as the ratio of housing demand

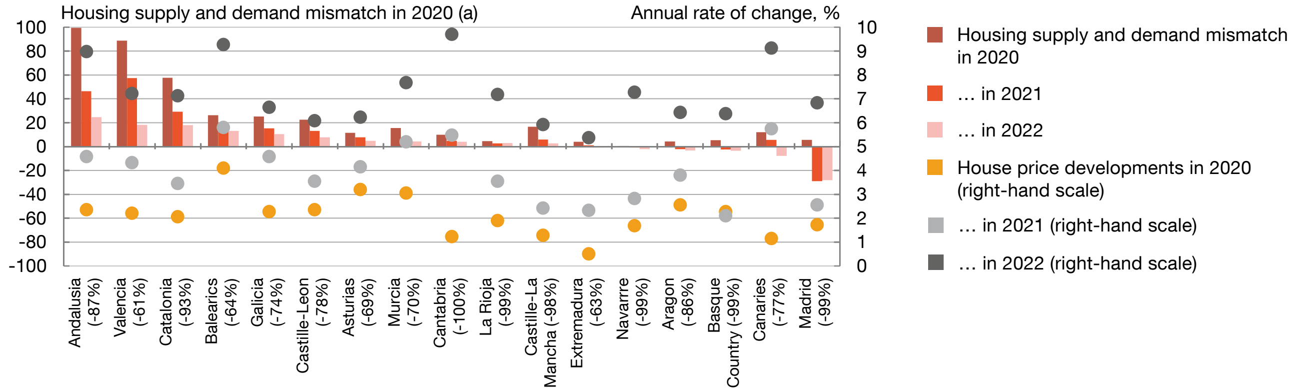
11 This relationship is not as strong in the new housing segment as in the second-hand housing segment (in which notable increases are observed for all the periods considered and in almost all regions). This could owe to the fact that new house sales and their prices are the result of agreements in which it is more difficult than in the second-hand housing market for potential buyers (as price-takers) to negotiate the price. Property developers set prices based on their budgeted construction costs and mark-ups, with no room for potential buyers to individually negotiate in this segment.

12 The chart shows, in brackets next to the name of each region, the correlation between the change in prices and the housing supply and demand mismatch (measured as the difference between the two). This correlation is very high across all regions. The results are similar if building permits, rather than completion certificates, are used as the supply indicator.

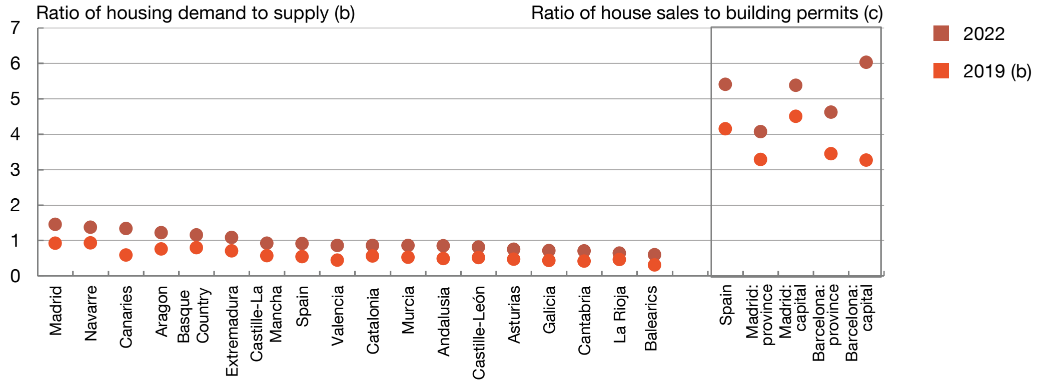
Chart 4

Stronger price growth in those regions that have seen a greater housing supply and demand mismatch

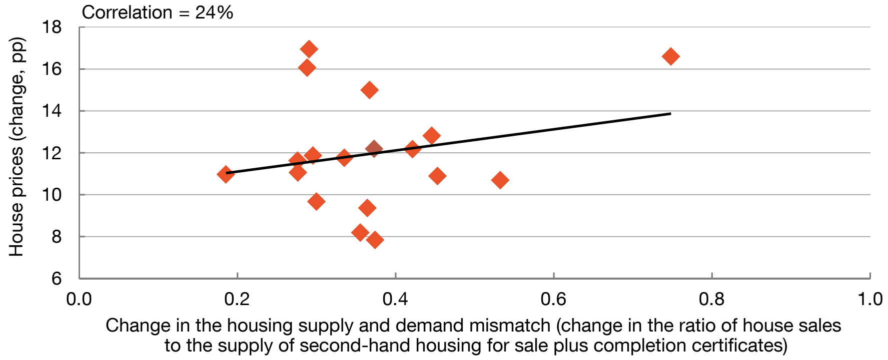
4.a Each region has seen greater house price growth post-pandemic, in step with a higher relative supply shortage, a relationship that has become stronger than in previous years



4.b This greatest supply shortage since the pandemic tends to be more pronounced in the capitals of metropolitan areas



4.c The greater housing supply and demand mismatch appears to have contributed to part of the regional heterogeneity in price developments (d)



SOURCES: Banco de España, Centro de Información Estadística del Notariado, INE, Idealista and Ministerio de Transportes, Movilidad y Agenda Urbana.

a Housing supply comprises second-hand housing (proxied as the number of house sale advertisements published on the real estate portal Idealista available since end-2020) and new housing (proxied as the number of completion certificates). Housing demand is proxied as the number of house sales. The housing supply and demand mismatch is measured as the difference between the two, expressed in thousands of units. In brackets, next to the name of each region, is the correlation between house price developments and the housing supply and demand mismatch indicator for each region between end-2020 and end-2022.

b For each region, housing supply and demand are proxied as indicated in the previous footnote. However, for the purposes of regional comparison, the mismatch is represented as the ratio of demand to supply (with a higher value indicating a greater mismatch or greater relative supply shortage), rather than as the differences between the two. Owing to the lack of regional data before 2020 for the variable proxying the supply of second-hand housing, 2020 is considered as the initial reference year, rather than 2019.

c Information proxying the supply of second-hand housing is only available at regional level. Consequently, in the right-hand side of this chart, only the supply of new housing is considered, proxied by building permits (both for new builds and for extensions and renovations, as neither completion certificates nor building permits solely for new builds are available for the capital). For comparison purposes, this same indicator is used to proxy the supply of new housing for the province and for Spain as a whole.

d The chart sets out, drawing on region-level data, the correlation (and the regression line) between house price developments from 2020 to 2022 and the change in the housing supply and demand mismatch in that period. For the purposes of regional comparison, the housing supply and demand mismatch in a given year is calculated as the ratio defined in the previous chart for the regions. The darker shaded diamond represents Spain as a whole and is not included in the regression.

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to supply) in all regions in 2022 (see Chart 4.b).[13] The mismatch also tends to be more pronounced in the capitals of metropolitan areas (see the right-hand side of Chart 4.b). Moreover, as might be expected, a positive relationship has been observed since the pandemic between the growing housing supply shortage at the regional level and nominal house price growth (see Chart 4.c). Consequently, the supply and demand mismatch appears to have contributed to the regional heterogeneity in price developments, with the result that price growth has been stronger in those regions that have experienced a greater supply shortage vis-à-vis relatively high demand.

Other factors, such as inherited housing and house sales to foreign buyers, have also contributed to the regional heterogeneity in house price developments, as they have prompted shifts in supply and demand – to varying degrees or with different signs – since the pandemic. For instance, in the early stages of the pandemic, the proportion of inherited housing increased and house sales to foreign buyers decelerated, which exerted downward pressure on prices (see Chart 5.a).[14] Today, it appears that the former has lost strength, while the latter are exerting upward pressure on prices.[15]

Future outlook

The current inflationary episode and the consequent tightening of monetary policy and, therefore, of financing conditions are having a negative bearing on housing market dynamics.[16] However, their impact is mitigated by some factors. As mentioned above, current buyers are, broadly speaking, middle-aged households on a medium or high income with considerable pre-existing (real estate and financial) assets, who therefore do not finance a very high portion of their house purchases with credit.[17, 18] In addition, these households are not among those that have been hit hardest by the rise in inflation, in terms of the purchasing power of their income.[19] These factors should help curb the

13 Unlike Chart 4.a, Chart 4.b uses as the indicator of the mismatch, for the purposes of regional comparison, the ratio of total house sales (to proxy demand) to the number of house sale advertisements published on the real estate portal Idealista (which proxies the supply of second-hand housing for sale) plus the number of completion certificates (which proxies the supply of new housing). The results are similar if building permits, rather than completion certificates, are used as the indicator of new housing supply.

14 Alves and San Juan (2021) find that the higher exposure to foreign tourism of some geographical areas, such as Spain's Mediterranean coast and islands, seems to have contributed to the greater relative weakening in their prices during the period of tighter international travel restrictions.

15 Using regional level data, the correlation between the weight of inherited homes and house price developments is slightly higher in 2021 (when the number of inherited homes reached an all-time high) than in 2022. Inherited housing as a proportion of all transfers of housing has returned to its pre-pandemic levels, while house sales to foreign buyers reached an all-time high in 2022.

16 In 2023 Q1 seasonally adjusted house sales were down almost 11% compared with 2022 Q2, when they were at their highest level since 2007 Q3. For their part, after rising by more than 8% in 2022 H1, house prices decelerated in H2, posting year-on-year growth of 5.5% in Q4.

17 According to National Statistics Institute (INE) data, young adults aged 16-29 have the lowest home ownership rate (30.7% in 2022), and have seen the sharpest drop in home ownership since 2007 (when it stood at 58.1%). There has been a moderate increase in their rate of home ownership since the pandemic (from 25.5% in 2019), which may be linked to more inheritances and gifts received by this age group stemming from the health crisis. It is precisely this age group where a higher proportion is at the lower tail of the income distribution.

18 Based on notarial information, in 2023 Q1 less than 44% of house sales were mortgage financed, a smaller proportion than before the pandemic (slightly over 48% in 2019 Q1). Moreover, the loan amount in 2023 Q1 was around 71% of the price, compared with around 75% in 2019 Q1. Since September 2022, the percentage of mortgage financed sales has resumed its downward trend, and the decline in the share of the price financed has sharpened.

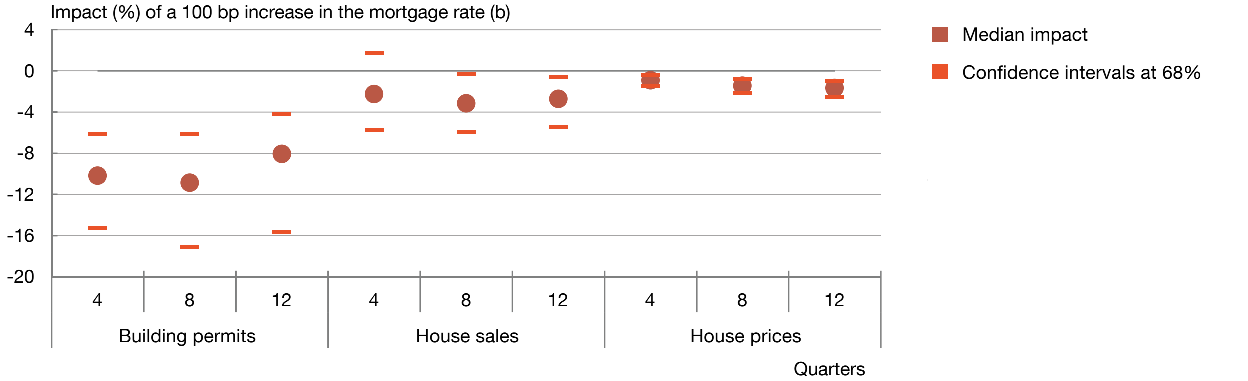
19 Basso, Dimakou and Pidkuyko (2023). Specifically, the authors estimate that in 2021, inflation was 2 percentage points (pp) lower for higher-income households (top quartile) than for lower-income ones (bottom quartile).

Chart 5

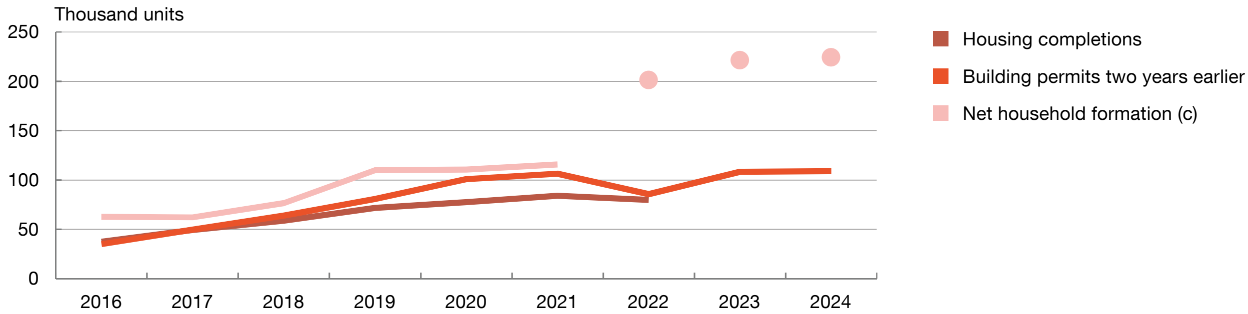
The growing insufficiency of housing supply to meet demand is offsetting other factors that are exerting downward pressure on prices

5.a The increase in inherited housing as a result of the pandemic may have exerted downward pressure on house prices (a)

5.b The gradual increase in the cost of bank lending is adversely affecting the residential housing market, with a significant impact on quantities and prices



5.c But current housing production is insufficient to meet demand, which leads to downward stickiness in house prices



SOURCES: Banco de España, Centro de Información Estadística del Notariado, INE and Ministerio de Transportes, Movilidad y Agenda Urbana.

a The chart depicts two regressions between the share of inherited housing as a percentage of transfers of housing and the increase in house prices (in pp) on regional level data. Each regression corresponds to a different period: i) pre-pandemic (2013-2019), where the share of inherited housing relates to 2013 and the change in house prices to the cumulative change in the period 2013-2019 (denoted by the brown diamonds and regression line); and ii) post-pandemic, where the share of inherited housing relates to 2022 and the change in house prices to the cumulative change in the period 2019-2022 (denoted by the grey squares and regression line). The chart shows the correlation between the two variables in both periods. The darker shaded diamond and square depict Spain as a whole and are not included in the regressions.

b The chart depicts the median response from house prices, house sales and building permits to a 100 bp increase in the mortgage rate, in a BVAR model estimated using quarterly data from 2004 to 2022, including as endogenous variables housing investment in addition to those mentioned, and as control variables indicators of the economic situation (GDP and the harmonised index of consumer prices) and financing and credit conditions (the one-year interbank rate and the outstanding amount of loans for house purchase). It also depicts the confidence intervals at 68%.

c The circles for the period 2022-2024 denote the latest INE figures available for projected household formation (October 2022).

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slowdown already observed in house sales. Moreover, if sales were to steady in relative terms this, together with the shortage of new housing and the high costs of building materials, would also likely contribute to some downward stickiness in nominal prices.[20] Indeed, the increase in construction costs, in particular in the cost of materials, has not yet been fully passed through to house prices (see Chart 1.c), and these costs, unlike energy input costs, have barely declined.

To analyse the effect of an interest rate rise on the property market, an exercise has been conducted using a Bayesian vector autoregressive (BVAR) model, estimated using quarterly data from 2004 to 2022. The model includes house sales, nominal price and building permits as endogenous variables. It also includes GDP and the harmonised index of consumer prices (as control variables, to reflect the economic situation), the one-year interbank rate and the outstanding amount of loans for house purchase (to capture financing and credit conditions). Based on the results obtained, as shown in Chart 5.b, a 100 basis point (bp) increase in the mortgage rate (similar to that observed between end-2021 and end-2022) would have a negative and statistically significant median impact on the quantity variables (building permits and sales) and on prices.[21] For instance, after eight quarters, the median impact on building permits and house sales would stand at almost 11% and just over 3%, respectively.[22] The effect is smaller in the case of prices, amounting to slightly less than 2% after two years.[23, 24]

Over the coming years, developments in the relationship between housing supply and demand will be particularly influenced by net migration flows. Should the INE's projections be fulfilled (i.e. a significant increase in the number of households to 2024), continued tightness may be expected in some local markets, given the relatively few building permits granted in the past two years (which, roughly speaking, will give rise to housing completions over the next two years). Chart 5.c suggests that this volume of housing completions would not be sufficient to meet expected household formation.

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20 An additional factor currently underpinning the property market is the overall favourable financial situation of each institutional sector (Banco de España, 2020). Several developments have contributed to this since the global financial crisis. Included here are credit institutions' application of more prudent credit standards and conditions, smoother developments in new mortgage loans (which were exceeded by repayments up to end-2020, prompting a gradual decline in the amount outstanding) and the decline in the stock of lending to the construction and real estate sector.

21 The median values of the impulse response functions of the BVAR are obtained, where the impulse is a shock to the mortgage rate equivalent to its standard deviation in the estimation period. As the model is linear, the impacts are scaled, to proxy the effects of a 100 bp rise in the mortgage rate. The impacts are statistically significant with a 68% probability, except for house sales in the first quarters, which may suggest some anticipatory effect among potential house buyers in view of expectations of mortgage rate rises. These results are robust to changes in the order of the variables, the omission of some variables and the inclusion of more lags.

22 In this exercise, only new housing is considered as a variable of housing supply, proxied as the number of building permits, in line with the literature. Building permits are more volatile, and are much smaller in volume than total housing supply, which is far more rigid in the short term (because it also includes the stock of second-hand housing on sale and the stock of unsold new housing). Consequently, building permits will respond far more than the total housing supply to changes in economic and financing conditions.

23 The impact on prices and quantities will be larger when market rates have been fully passed through to lending rates. In that case, given that the one-year EURIBOR has to date risen by 435 bp from the December 2021 lows, while the mortgage rate has increased considerably less (by less than 220 bp), the full pass-through of the former to the latter, under the model used, would translate into a median impact of slightly more than 6% on house prices in two years.

24 Studies covering the euro area and the United States find somewhat larger effects than those obtained here for Spain. For the euro area, Battistini, Gareis and Roma (2022) find that, in the pre-pandemic period, a 100 bp increase in mortgage rates would lead to drops of 8% and 5% in housing investment and house prices, respectively, after two years. Vašíček and Žďárek (2022), for the euro area, and Liu, Lucca, Parker and Rays-Wahba (2021), for the United States, also find a somewhat larger response to movements in mortgage rates from the residential activity variables than from house prices.

From an economic policy standpoint, one possible conclusion to be drawn from the article, given the housing supply and demand mismatch described, is that the procedures for managing development land should be reviewed, to allow for a more flexible response to existing needs.[25]

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25 At present, according to the Urban Information System of the Ministry of Transport, Mobility and Urban Agenda, which contains urban development information on 65% of Spanish municipalities (covering almost 73% and 98% of Spanish territory and the Spanish population, respectively), close to 24% of urban development plans date back to before 1992, while barely 30% are subsequent to 2008. This underscores the need to review and update the figures of the oldest plans, to make more land available for housing production and thus cater to the changes in demand and the latest needs. Moreover, of the more than 9.2 million housing units envisaged for the development areas under these plans (a proxy of the development land's capacity for new homes), less than 30% have been built.