# HOUSEHOLD FORMATION AND THE NEED FOR NEW PRIMARY DWELLINGS IN THE MEDIUM TERM

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Introduction

Following the severe and protracted shake-out of the Spanish residential property market that began in 2008, the latest data indicate that the market is now starting to stabilise. Specifically, since end-2014, both housing purchases and housing starts have begun to show a slight recovery, fuelled by the general improvement in economic activity, the labour market impetus and more favourable financing conditions.

Nevertheless, calibrating the strength of the recovery is no easy task. The depth of the housing crisis drove activity down to extremely low levels, so there may be a certain rebound effect in the initial recovery stages. In addition, household debt levels remain high, as does the unemployment rate (especially among persons of an age to form a household), and there is a plentiful stock of unsold property, all of which could limit sector recovery in the short term.

In order to analyse the outlook for the residential property market, it is useful to draw a distinction between potential and actual housing demand:[2] potential demand is essentially linked to demographic factors, while actual demand relies on more conjunctural factors such as credit availability, youth unemployment or the user cost of housing capital.

This article aims to examine the role played by demographics in potential demand for primary dwellings, which is the component that may be estimated most directly from demographic projections. For this purpose, the household projections of the Spanish National Statistics Institute (INE) at provincial level for the period 2015-2029 are used; these assume that both the flow of immigrants and the household formation rate in 2014 will continue in future. Using this baseline scenario, several alternatives are formulated assuming, in comparison with the INE's figures, a slightly higher inflow of immigrants and a smaller household size, and in consequence higher potential demand for primary dwellings.

The estimates deriving from potential demand for primary dwellings could be an appropriate indicator of trend developments in new building needs in the absence of market imbalances. However, one of the legacies of the residential property market crisis is the sizeable stock of unsold housing, which means that potential demand may be met by new building, but also, initially, by sales of existing housing. Moreover, the amount of housing stock varies from one province to another and this, together with the low rate of interprovincial mobility of the Spanish population, suggests that an analysis of the housing market must include a regional dimension. Thus, to determine new housing needs at a national level, in this article estimated net household formation is aggregated province by province after deducting a certain level of unsold housing stock.

The article is structured as follows: first the methodology used is described, and then the population projections are presented, outlining the different household formation scenarios

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1   With the collaboration of Ángel Luis Gómez and Marta Martínez.
2   See, for example, Rodríguez, Curbelo and Martín (1990) or La Caixa (2001).

for the period 2015-2029;[3] lastly, alternative paths for housing stock absorption are considered to obtain an estimate of future new building needs.

**Household headship rate method**

A standard procedure for estimating potential demand for primary dwellings is the household headship rate method,[4] which is based on the principle that each household has just one head who, in turn, occupies a single primary dwelling. In consequence, the number of households and of heads of household for the whole population is identified and net household formation between two moments in time is used as a proxy for potential demand for primary dwellings, assuming that the housing corresponding to households that disappear serves to meet the needs of new households that are formed. The average headship rate of the economy would be the ratio between the number of heads of household and the total population (or the reciprocal of average household size). If the population is divided into demographic groups, the headship rates of each of those groups may be calculated.

The number of households for a given horizon can be calculated by multiplying the product of the population projection for each group by the headship rate calculated for each group. The population groups may be formed according to various criteria, such as geographical area, age group or nationality. Moreover, the analysis may be enriched by using a combination of more than one of those characteristics or by allowing the headship rate to evolve over time in keeping with the patterns observed.

The main factors that explain household formation include the age at which people start to work, their expected future income level, the phase of the economic cycle, and policies regulating access to housing. In this article, household headship rates have been calculated annually for the period 2002-2014, broken down by age group and region, and drawing a distinction between the Spanish and the foreign population.[5] The breakdown by age group is important, since most new households are formed as a result of young adults leaving the family home [Vinuesa (2008)]. In a smaller – albeit growing – proportion, household formation is also the result of existing households splitting into two when couples separate.[6] The breakdown by geographical area is particularly significant for the analysis of potential housing demand, since demand in one area can only be met by housing located in that area. Lastly, as Vinuesa (2005) indicates, the pattern of household formation differs between the foreign and the Spanish population, for numerous reasons including, inter alia, different forms of living arrangements and different income levels.
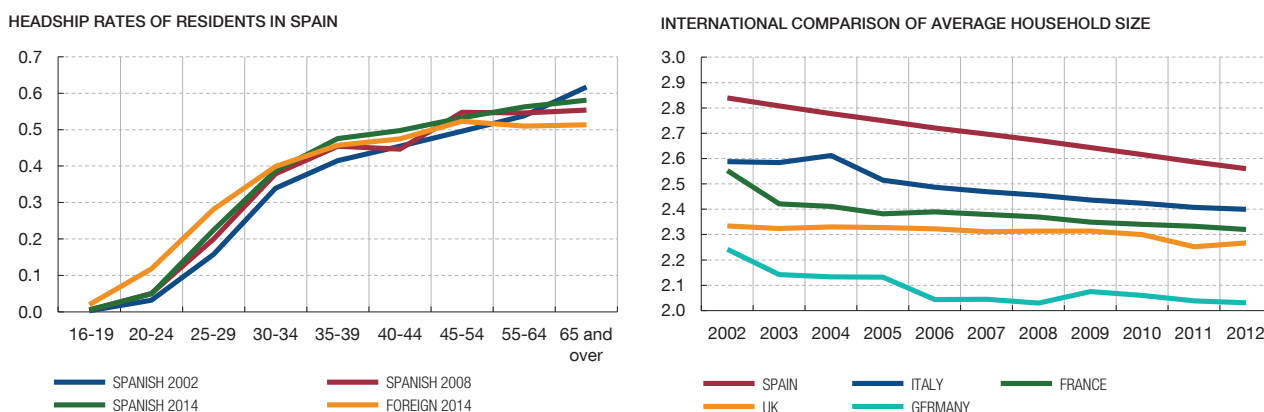
As the left-hand panel of Chart 1 shows, household headship rates increase with age, so changes in the age structure of the population affect the average headship rate of the economy. In addition, household formation patterns of the immigrant population differ from those of the Spanish population in the early years (showing higher headship rates) and again in the later years (showing lower headship rates), although the difference is much smaller in the middle years. In general, household headship rates have risen over

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3 The article analyses the whole of Spain, excluding Ceuta and Melilla.

4 In Spain, this method has been used, for example, by Curbelo and Martín (1992), García-Montalvo and Mas (2000), APCE-AFI (2004), Oliver (2005), Martínez, Riestra and San Martín (2006), Vinuesa (2008 and 2012) and Módenes and López-Colás (2014).

5 The headship rates are calculated using the Spanish Labour Force Survey (EPA) microdata, with 2002 the first year for which figures are available. In addition, to avoid using small samples, the headship rates of the immigrant population are calculated at the national level, compared with those of the Spanish population which are calculated at the regional level (a province by province analysis is not possible). See Matea (2015) for more details of how the calculation was made.

6 However, García Montalvo (2007) attributes less importance to this aspect since, in many cases, after a separation, one of the household members returns to the parental home or forms a new household with others.

**HEADSHIP RATES OF RESIDENTS IN SPAIN**

**INTERNATIONAL COMPARISON OF AVERAGE HOUSEHOLD SIZE**

SPANISH 2002 — SPANISH 2008
SPANISH 2014 — FOREIGN 2014

SPAIN — ITALY — FRANCE
UK — GERMANY

SOURCES: Eurostat and Banco de España.

time; however, during the crisis, the rate of growth slowed somewhat in the case of the Spanish population, leading to an actual decline in the headship rate among those over 64, while headship rates among the immigrant population in the younger and older age cohorts also fell.

At the international level, household headship rates in Spain are lower than in other European countries. The differences are small in comparison with Italy, but much greater in comparison with France, Germany or the United Kingdom. The biggest difference is in the 20-29 age group, and it persists across all educational attainment levels, whereas in the over-40 age groups with the same educational attainment level the rates are very similar. In the past decade average household size, which is the reciprocal of the headship rate, has fallen more markedly in Spain than in other countries (owing, in particular, to higher educational attainment and income per capita levels in Spain); on average, however, the number of household members is Spain is still higher (see the right-hand panel of Chart 1).

Spanish households have more in common with those of other southern European countries than with those of north and central European ones.[7] In comparison with the latter, households in Spain are formed at a later date and are larger, on average, as young adults continue to live in the family home for longer and there is a higher proportion of grandparents living in their children's households. The differences are smaller in the middle years, but the gap remains, and may be explained by the lower proportion of single-parent households in Spain.
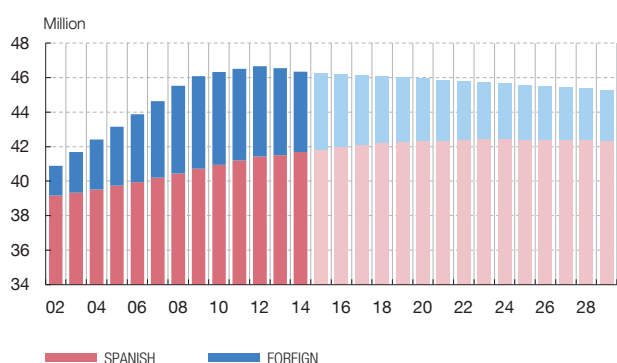
**Population projections**

For this analysis, the INE's population projections at provincial level for the period 2014-2029 have been used: these extrapolate the population pyramid on the assumption that the most recent patterns of birth and mortality rates, interterritorial mobility and the acquiring of Spanish nationality continue.[8] However, in the projections there is no breakdown by foreign and Spanish population. Since this information is useful in order to build alternative scenarios for growth in numbers of households, this breakdown has been estimated based on the demographic patterns observed in this respect in recent years.[9]

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7  See, for example, Leal (2004) or Módenes and López-Colás (2014) for a more in-depth analysis of the differences in household formation from one country to another.
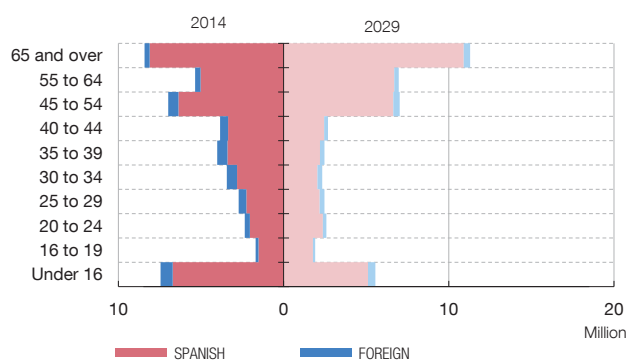
8  In particular, for the entire projection horizon, annual migrant flows are held constant at 2014 levels, with inflows of 290,677 foreign population and 41,845 Spanish population.

9  See Matea (2015) for more details.

**POPULATION AND POPULATION PROJECTIONS BY NATIONALITY (a) (b)**

**POPULATION TRENDS BY AGE GROUP (a)**



SOURCES: INE and Banco de España.

a  Not including Ceuta or Melilla.
b  Projections for the period 2015-2029.

The INE's projections point to a contraction in population size of 2.2% in the period 2014-2029, resulting from a decrease of 36.7% in the foreign population, partly offset by an increase of 1.6% in the Spanish population, largely linked to the process of acquisition of Spanish nationality (see Chart 2). In general, the cohorts are expected to decrease in size, with gradual ageing of the population. However, the population of 16 years or over, which includes all heads of households, is expected to increase over the period considered. What is more, in the case of the Spanish population, as household headship rates increase with age, population ageing would mean that the growth in the number of Spanish households in the period 2014-2029 would be proportionally higher than the growth in the population of 16 years or more.
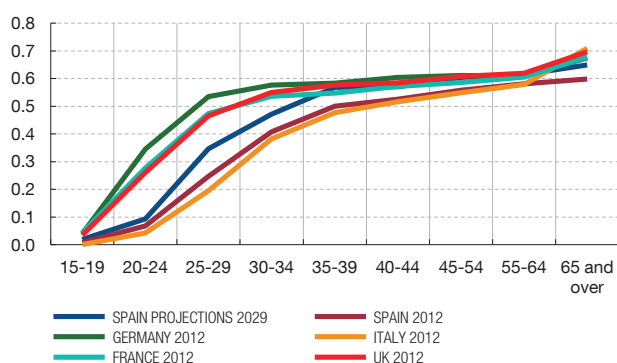
**Household formation scenarios**

The INE's household projections for the period 2014-2029, which derive from the population projections described above,[10] have been taken as a baseline scenario for the construction of household formation scenarios. One singular feature of how this scenario is constructed is that it is based on the latest migratory flow and household formation trends, which are largely shaped by the last recession. This may build an unfavourable bias into the projections, as the developments observed in the last growth phase are not taken into account. Indeed, the latest Labour Force Survey releases point to a slightly higher number of households than envisaged in the INE's projections. For that reason, three alternative scenarios have been built using more favourable assumptions than those contained in the baseline scenario.[11] In scenario 2 it is assumed that household headship rates will evolve in accordance with past trends,[12] which would take headship rates closer to those observed in other European countries (see the left-hand panel of Chart 3). This seems

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10  See INE (2014c) for more details on how the household projections are drawn up. This scenario is similar to that obtained by applying the household headship rates for 2014 to the INE's population projections.

11  The scenarios have been constructed at the provincial level, applying the regional household headship rates to all the provinces in each region.

12  Specifically, for those cohorts with higher household headship rates in 2014 than in 2002, it is assumed that they will continue to grow at the average annual pace observed in the period 2002-2014, which is equivalent to extrapolating the more structural trends, as it includes a similar number of years of growth and of recession on the property market. Nevertheless, it is expected to be some time before that rate of growth is achieved, so a transitional 5-year period has been set during which the rate of growth of headship rates gradually quickens, to reach the average annual rate of growth of the entire sample period by 2019. For cohorts with lower headship rates in 2014 than in 2002, it is assumed that those rates also will grow in coming years, but in this case to reach the highest headship rate observed between 2002 and 2014 by 2029; this may be considered a conservative assumption, providing a 15-year horizon over which to return to that maximum value.

CHART 3

PROJECTED HEADSHIP RATES AND INTERNATIONAL COMPARISON

NET HOUSEHOLD FORMATION SCENARIOS (a)
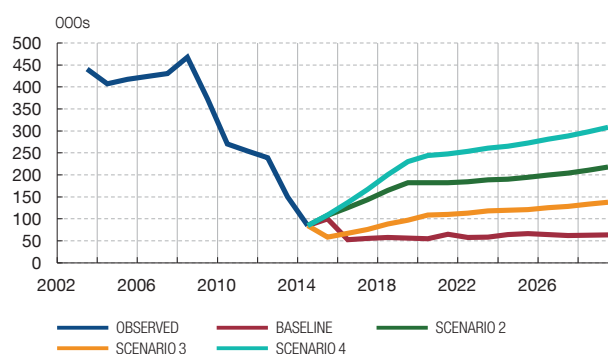


SOURCES: INE and Banco de España.

a  Scenarios: the INE's household projections constitute the baseline scenario; scenario 2 is obtained by applying rising headship rates to the INE's population projections, assuming that they reach in 2019 the average annual growth for the period 2002-2014 or, if that figure is negative, by assuming that they increase at a constant rate, to reach in 2029 the maximum headship rates recorded in the period 2002-2014; scenario 3 assumes that immigration will rise until 2019 and stabilise thereafter at the average observed in the period 2002-2014, with headship rates constant at 2014 levels; and scenario 4 combines rising headship rates as in scenario 2 with rising immigration as in scenario 3.

reasonable in light of Spain's real convergence with the euro area and the positive relationship observed between levels of household headship rates and income per capita, since higher income levels encourage the formation of independent family units, increasing the likelihood of households dividing. In Box 1 an alternative approach is used to better gauge the credibility of these ad hoc scenarios. Specifically, the changes in Spanish headship rates would depend solely on age and educational attainment level (a proxy for future income), both of which are variables that are known for most generations in the projection exercise. The findings indicate that the headship rate would continue to increase in coming years, but at a slower pace than over the last cycle, placing household headship rates between the two scenarios described earlier.

A more favourable economic situation than that explicitly envisaged in the baseline scenario could also have an impact on population flows, specifically giving rise to higher inflows of foreign population. In order to analyse only the impact derived from a higher rate of population increase, a third scenario has been constructed where headship rates are as in the baseline scenario, but immigrant inflows are steady at the average level of the period 2002-2014 so that, instead of decreasing, in this scenario the population grows by 2% between 2014 and 2029.[13] Lastly, the fourth scenario envisages a combination of a population increase as in scenario 3 and higher headship rates as in scenario 2.

The results of the different scenarios are summed up in the right-hand panel of Chart 3 and in Table 1. Under the baseline scenario, by 2029 there would be 19.1 million households in Spain, almost one million more than in 2014. At the other extreme, that is, under scenario 4, by 2029 there would be almost 22 million households, 3.6 million more than in 2014. Scenarios 2 and 3 lie between the two extremes, with estimated increases in the number of households of 2.7 million and 1.6 million, respectively, between 2014 and 2029. Accordingly, of the last two scenarios, one relating to the headship rate and the other to migratory flows, the higher number of households is observed in the one that assumes an increase in headship rates.

13  This scenario assumes a gradual increase in the level of immigrant inflows over the next five years, to reach the average of the period 2002-2014 by 2019, at the rate of a fifth of the difference compared with the present level each year. From 2019 inflows are assumed to be stable at 495,000, distributed by province in proportion to the foreign population in each province in 2014.

The headship rate in Spain has increased substantially since the 1980s [by around 9 percentage points (pp)]. This increase has been continuous and has been concentrated in household formation by the Spanish population, since the rate corresponding to the immigrant population, which over the last twenty years has displayed a higher average household size, has held relatively steady (see Panel 1).

This box analyses the quantitative importance of age and level of educational attainment in explaining changes in the Spanish headship rate. First, and as already mentioned in the main body of this article, changes in the age structure of the population impact directly on the average headship rate of the economy. Also, the educational attainment level of each individual will play a fundamental role in determining when they leave the family home. Note that, in principle, a higher level of training delays the entry of young people to the labour market and increases their expected future income flows, which may increase the probability of household formation in the future (see Panel 2).[1]

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1  Compared with other EU countries (such as France, Germany or the United Kingdom), when educational differences have been taken into account, the differences in headship rates for the over 40s are small. However, all young Spanish adults, irrespective of their educational attainment level, form households later than their counterparts resident in other countries. Some of the economic literature relates this to the labour instability stemming from the very high incidence of temporary employment in Spain [see García-Ferreira and Villanueva (2007)].

To assess the relative importance of these factors, in this box three regressions are made, using data from the Spanish Labour Force Survey between 1977 and 2014 for the population of Spanish nationality, according to the educational attainment level of each person (completed primary education, completed secondary education and completed tertiary education). The dependent variable is an indicator that takes the value 1 if the individual is a head of household or reference person and 0 otherwise. Dummy age variables for each educational attainment level are added as independent variables:

$$1 \ (i = \text{head} \mid \text{educ}) = \alpha_0^{\text{educ}} + \sum_{e=16}^{100} \alpha_e^{\text{educ}} \ 1 \ (\text{age}_i = e)$$

Using this model, the dummy age variables reasonably replicate the change in the headship rate of the group considered, depicted in Panel 2 for each educational attainment level. Also, as seen in Panel 3, this model is able to adequately relate the recent changes in the headship rate to those in the educational and age structure of the population.[2] Specifically, of the total growth in the headship

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2  The exercise has certain limitations. First, the effect of the crisis and subsequent recovery is not taken into account, since the approach is structural and not cyclical. Second, the important generational changes in the population with different educational attainment levels are not
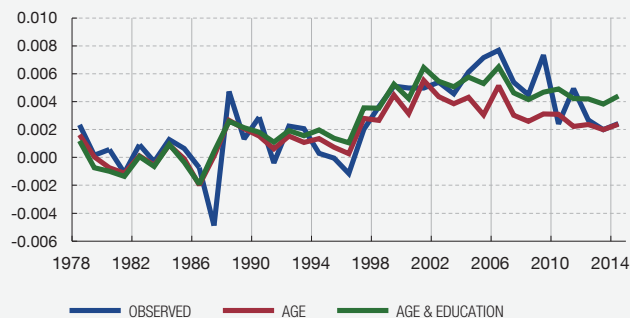
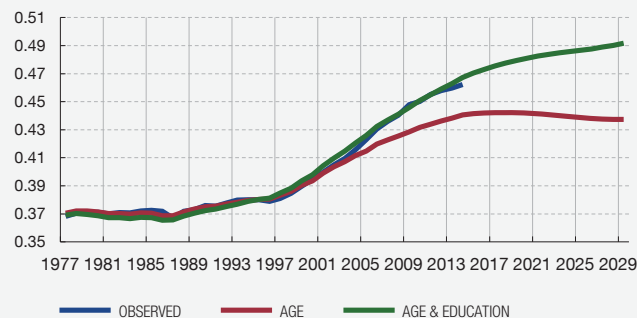1  AVERAGE HEADSHIP RATE BY NATIONALITY
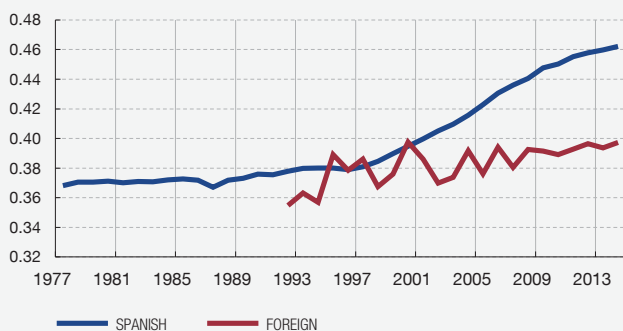


2  HEADSHIP RATES BY AGE AND EDUCATIONAL ATTAINMENT LEVEL (2014) (a)
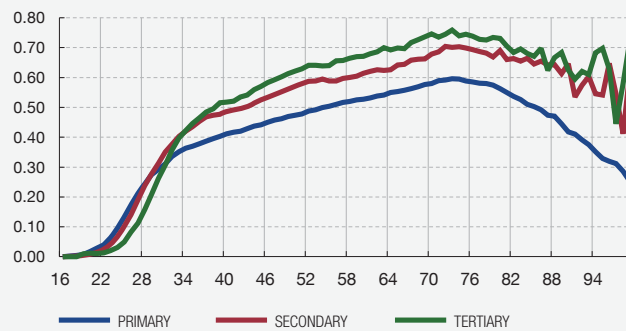


3  CHANGES IN AVERAGE HEADSHIP RATE (a)



4  PROJECTION OF AVERAGE HEADSHIP RATE (a)



SOURCE: Banco de España.

a  National population.

rate between 1977 and 2014, three quarters would be attributable to changes in the age structure of the population, while the other quarter would be attributable to changes in education and its interaction with age. However, a model in which only the age structure of the population is taken into account would give a lower growth of the headship rate in the latter years of the sample period and especially over the projection horizon. In particular, the changes in the age structure of the population between 2014 and 2029 would keep the headship rate of the national population relatively constant. However, when the increase in the educational

attainment level of the Spanish population is considered, household formation rises by around 3 pp over the next fifteen years.[3] The resulting projections are in the middle of those of the baseline scenario of the main body of the article (which showed an increase in the headship rate of 1 pp) and those of the most expansionary scenario, which incorporated a higher inflow of immigrants and a smaller household size (with growth of 6 pp in the headship rate).

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taken into account either. It should be borne in mind that the educational attainment level of the Spanish population has changed drastically in recent decades. Specifically, more than 90% of Spanish people born in 1920 did not enter secondary education, while by the early 1960s this figure had fallen to 15%.

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3  In order to make a projection taking into account education it is necessary to project the educational attainment level during the life of all the sample generations and of those that have yet to enter the sample. For this purpose, the methodology developed in Lacuesta and Cuadrado (2007) is used, estimating the growth of the educational attainment level of each existing generation and assuming that new generations will act like the latest existing one.

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In annual average terms, net household formation between 2015 and 2029 would range from 63,000 under the baseline scenario to 238,000 under scenario 4, while average household size in 2029 would range from 2.4 to 2.2, respectively. In consequence, if the economic situation were to permit growth in headship rates and immigrant inflows as envisaged in that scenario, potential housing demand could be four times the INE's household projections by 2029. In any event, even in the most favourable scenario, household formation would be more moderate than that recorded in the period 2003-2008, which was characterised by strong population growth. In addition, it would also be lower than that of the period 2003-2014.[14] Specifically, under the baseline scenario, annual household formation in the period 2015-2029 would barely amount to 20% of the figure for the period 2003-2014, while under scenario 4 it would amount to 75%.

With the due caution required when estimating household formation by province, high geographical heterogeneity is observed in the distribution, irrespective of the scenario used. Under the baseline scenario, the number of households would decline in more than a third of Spanish provinces. In fact, only if headship rates were to continue to rise in coming years would potential demand for primary dwellings be positive in all Spanish provinces, with the highest levels in Madrid, Barcelona, Malaga and Alicante (see Chart 4).

**New primary dwelling needs**

Following the description of the different household formation scenarios, which proxy potential demand for primary dwellings, this section analyses the extent to which the new demand could be met by the existing housing stock or whether new housing would have to be built. In this respect, the first step is to quantify the initial market supply available. For that purpose, the volume of unsold new housing at end-2014 estimated by the Ministry of

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14  In annual average terms, between 2003 and 2008 annual net household formation amounted to 427,000, while in the period 2003-2014 it fell to 318,000.

| | Scenarios (b) | | | |
| --- | --- | --- | --- | --- |
| | Baseline | 2 | 3 | 4 |
| **Population age 16 and over (c)** | | | | |
| 2014 (d) | 38,886 | 38,388 | 38,388 | 38,388 |
| 2029 (d) | 39,748 | 39,089 | 41,066 | 41,066 |
| Rate of change, 2014-2029 | 2.2 | 1.8 | 7.0 | 7.0 |
| Percentage of foreign population, 2014 | 10.1 | 11.6 | 11.6 | 11.6 |
| Percentage of foreign population, 2029 | 6.3 | 7.2 | 11.2 | 11.2 |
| **Number of households (d)** | | | | |
| 2014 | 18,203 | 18,277 | 18,277 | 18,277 |
| 2029 | 19,144 | 20,956 | 19,879 | 21,840 |
| **Net household formation (d)** | | | | |
| 2015-2029 | 942 | 2,679 | 1,603 | 3,564 |
| Annual average | 63 | 179 | 107 | 238 |
| **Reduction in housing stock in 15 years (e)** | | | | |
| Total absorption at provincial level (%) | 44 | 96 | 71 | 99 |
| **Unsatisfied demand (annual average) (d) (e)** | | | | |
| Total absorption at provincial level (%) | 43 | 140 | 77 | 198 |
| Partial absorption at provincial level (%) | 56 | 161 | 95 | 219 |

SOURCES: INE and Banco de España.

**a** Excluding Ceuta and Melilla.
**b** The baseline scenario is at 1 January based on provisional 2014 data; all the other scenarios are annual averages based on known 2014 data. The scenarios are as follows: the INE's household projections constitute the baseline scenario; scenario 2 is obtained by applying rising headship rates to the INE's population projections, assuming that they reach in 2019 the average annual growth for the period 2002-2014 or, if that figure is negative, by assuming that they increase at a constant rate, to reach in 2029 the maximum headship rates recorded in the period 2002-2014; scenario 3 assumes that immigration will rise until 2019 and stabilise thereafter at the average observed in the period 2002-2014, with headship rates constant at 2014 levels; and scenario 4 combines rising headship rates as in scenario 2 with rising immigration as in scenario 3.
**c** Population resident in family homes, except for the baseline scenario where it is the resident population.
**d** Expressed in thousand units.
**e** Total absorption at the provincial level means that potential demand for main residence housing is met with the unsold housing stock existing in 2014 until it disappears completely in each province. Partial absorption assumes that potential demand is met with the supply available until the unsold housing stock reaches 1.5% of the housing stock in each province.

Public Works[15] has been used. In principle, only housing that has specific characteristics for use as primary dwellings should be considered, but in view of the difficulties involved in accurately estimating whether housing units are primary or secondary dwellings, in this analysis the total volume of unsold new housing has been considered, not discounting those units that were built to be used as second homes. This may distort the findings of the exercise.[16] New housing needs are estimated using two different assumptions for absorption of unsold housing stock: in the first it is assumed that no new housing will be built until the stock has completely disappeared, and in the second that construction activity will resume before that occurs, which is probably the most realistic assumption.

According to the Ministry of Public Works' figures,[17] unsold new housing stock at end-2014 amounted to approximately 540,000 units, continuing in the gradual downward

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**15** The holdings of financial institutions, which are difficult to estimate, have not been considered, nor the residential properties held by Sareb as they represent only a small percentage of the total supply available and are, in addition, mostly secondary dwellings. Moreover, nor is any change of use of existing properties acquired in the past envisaged, that is, it is assumed that all other unoccupied housing and second homes are not used to meet potential demand for primary dwellings.

**16** In some cases [see CatalunyaCaixa (2013)], the total stock is corrected by the weight of the secondary dwelling segment as a proportion of housing stock.
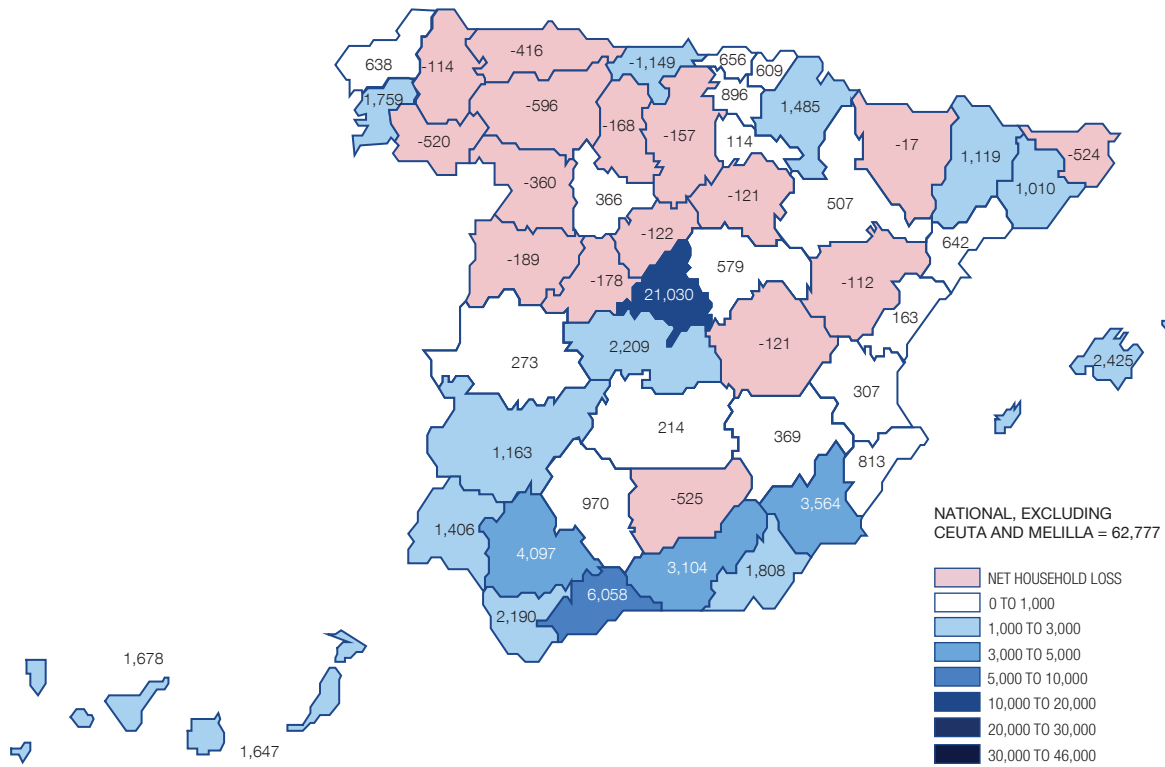
**17** See Ministerio de Fomento (2015) for a description of the latest developments in housing stock and of the methodology used to quantify it
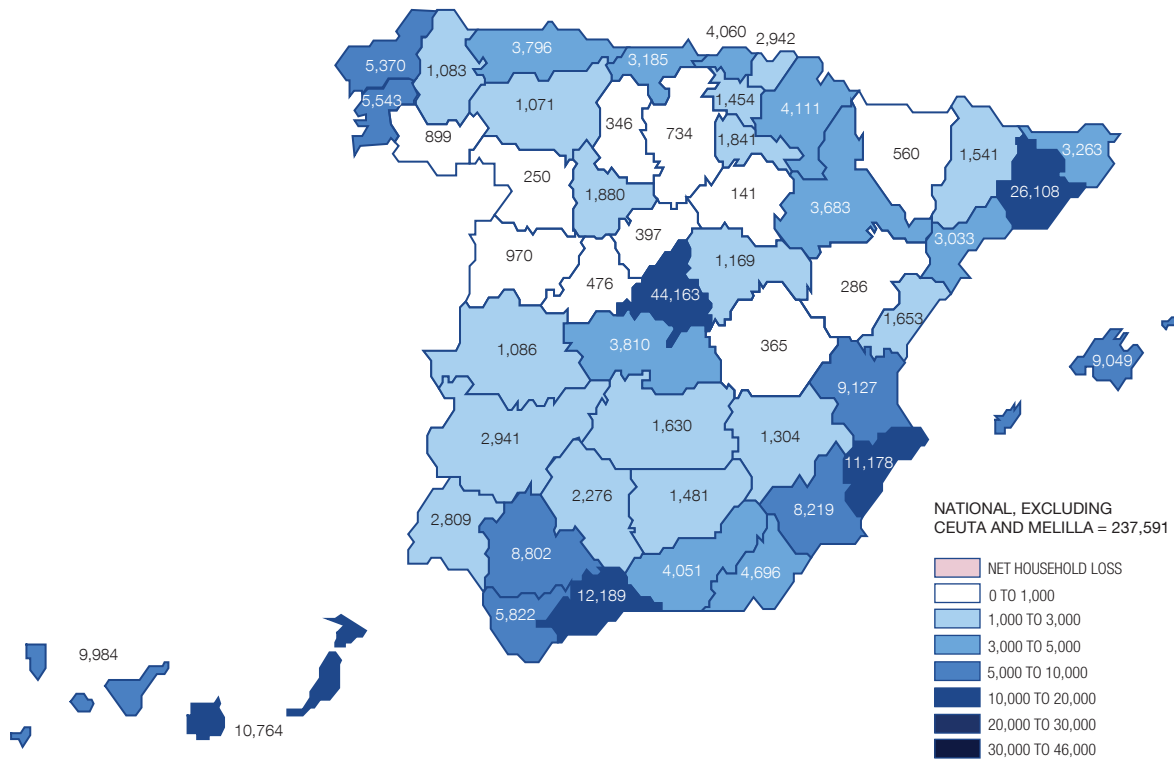
BASELINE SCENARIO



NATIONAL, EXCLUDING
CEUTA AND MELILLA = 62,777

NET HOUSEHOLD LOSS
0 TO 1,000
1,000 TO 3,000
3,000 TO 5,000
5,000 TO 10,000
10,000 TO 20,000
20,000 TO 30,000
30,000 TO 46,000

SCENARIO 4 (a)



NATIONAL, EXCLUDING
CEUTA AND MELILLA = 237,591

NET HOUSEHOLD LOSS
0 TO 1,000
1,000 TO 3,000
3,000 TO 5,000
5,000 TO 10,000
10,000 TO 20,000
20,000 TO 30,000
30,000 TO 46,000

SOURCES: INE and Banco de España.

**a** See note b to Table 1.

NATIONAL = 2.1%

Percentage

| | |
|---|---|
| | 0.0-1.0 |
| | 1.0 -2.0 |
| | 2.0 -3.0 |
| | 3.0 -4.0 |
| | + 4.0 |
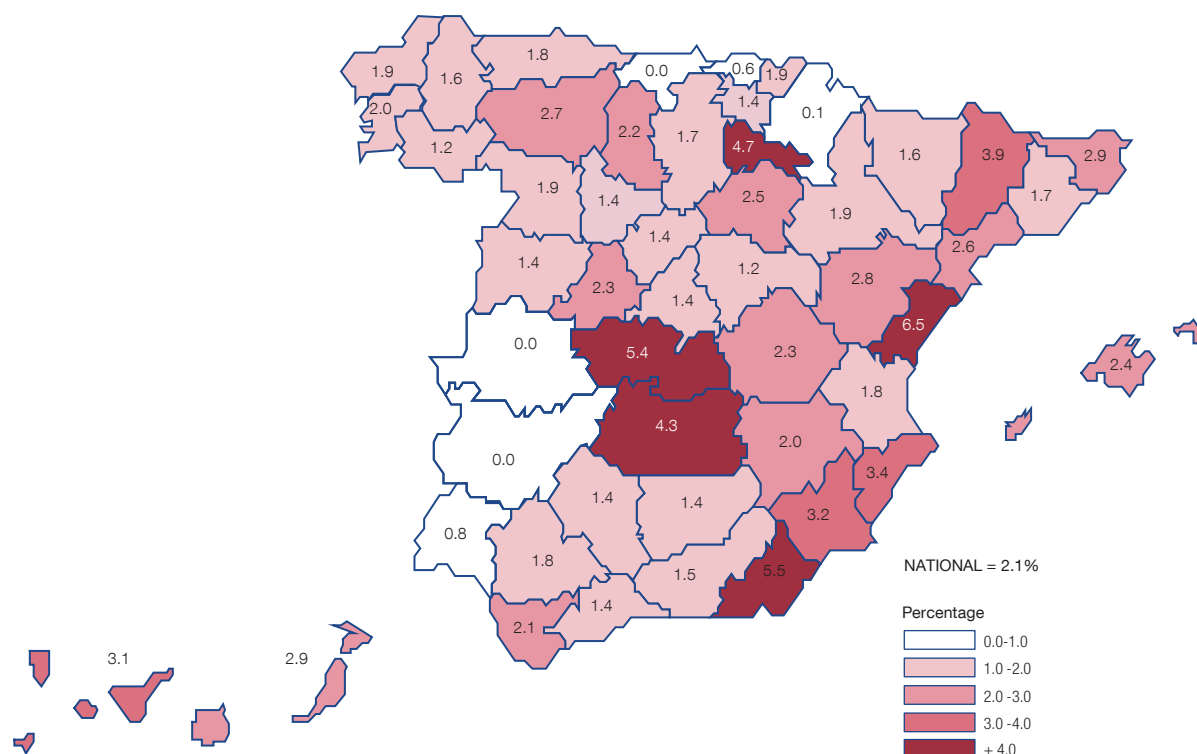
SOURCE: Ministerio de Fomento.

pattern observed since 2010, with a cumulative decline from peak of 17.5%. Alongside this slow absorption of housing stock, housing completions touched bottom in 2014 (at around 45,000 in the year) and purchases of new housing remained sluggish (55,000 in 2014).

Unsold housing stock is declining across the country, although its geographical distribution remains very uneven, with almost 50% of the unsold stock by volume concentrated among eight provinces (Madrid, Toledo and six along the Mediterranean coastline).

However, to determine the extent of supply imbalance, the key factor to analyse is the unsold housing stock as a proportion of the housing stock in each province (see Chart 5). The ratio between these two variables is above the national average (which is 2.1%) in provinces that are major tourist areas and have a higher proportion of second homes, and in inland areas where the urban development prospects envisaged before the crisis, owing to their proximity to major cities, have not been fulfilled. By contrast, the provinces with unsold housing stock as a proportion of the total stock below the national average include, notably, Madrid, Barcelona and Valencia.

Considering this heterogeneity in the geographical distribution of unsold housing stock, and the marked local nature of the housing market, the analysis should be conducted at the maximum level of geographical disaggregation possible, which in this case, in view of the data availability, is the provincial level. Thus, in order to determine the extent to which the household formation estimates contained in the previous section could translate, over the next fifteen years, into housebuilding, the different household formation scenarios are combined with the

The aggregate impact of the different household formation scenarios on the need for new construction masks a high degree of provincial heterogeneity in the intensity and velocity of the process of absorption of the excess supply. This box attempts to analyse these geographical differences and, to that end, groups the provinces according to the degree of imbalance between supply and demand in 2014. At one extreme are those provinces where there is barely any unsold housing stock (less than 1% of the total housing stock) and, at the other, those with the highest degree of imbalance (more than 4%).

The panels show how the process of absorption of unsold housing stock evolves over time for these groups of provinces under the baseline scenario (see Panel 1) and scenario 4 (see Panel 2) for

household formation, in both cases assuming total absorption of the unsold stock. In these panels, the results shown for each group are the sum of the results of the constituent provinces. Within the groups each bar corresponds to a specific year; positive values represent provinces with excess supply and negative values ones with a shortage. These figures are given as a percentage of the housing stock existing in 2014 in each group.[1] Given that the analysis is carried out at the provincial level, within a single group there may be, at any particular moment, some provinces with excess supply and others with a shortage, i.e. there may be a positive bar and a negative bar of the same colour. An
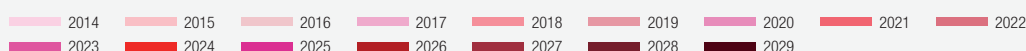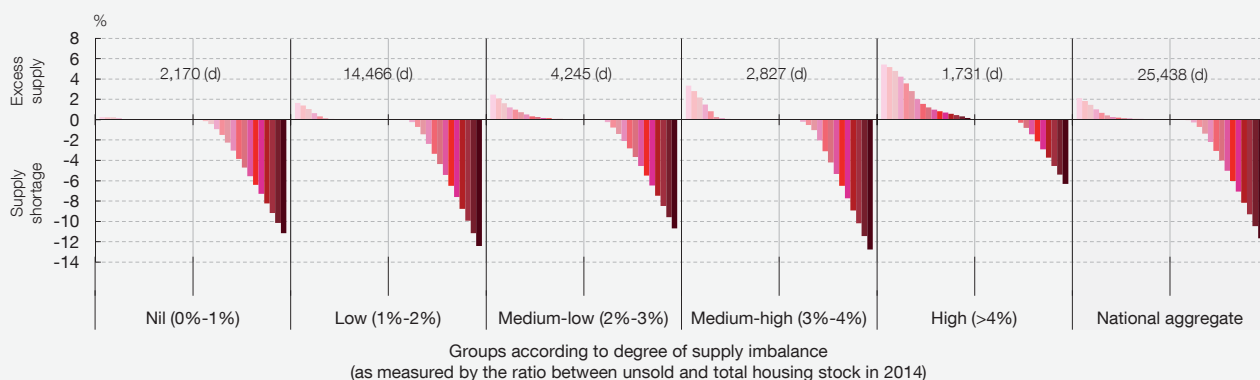
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1  In both panels the housing stock for each group in 2014 is shown at the top.

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PROCESS OF ABSORPTION OF UNSOLD NEW HOUSING STOCK ACCORDING TO THE DEGREE OF SUPPLY IMBALANCE (a) (b)
(2015-2029)

1  NET HOUSEHOLD FORMATION, BASELINE SCENARIO (c)
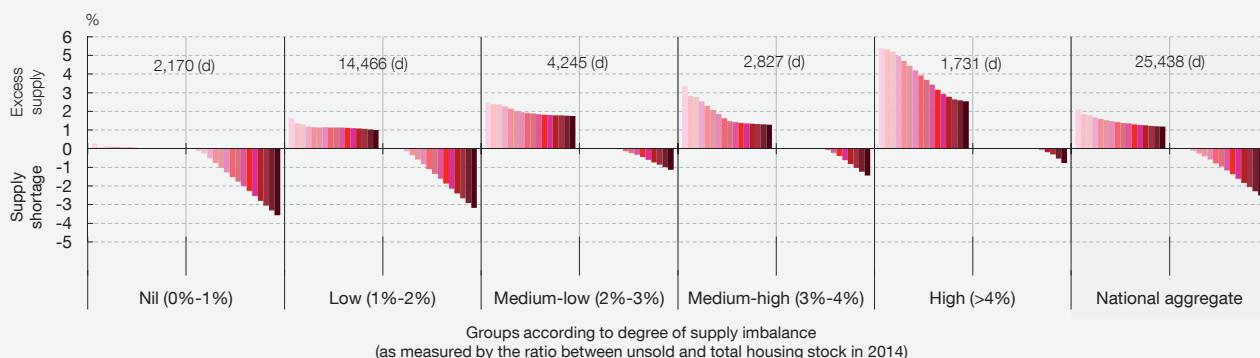


2  NET HOUSEHOLD FORMATION, SCENARIO 4 (c)



SOURCE: Banco de España.

a  The supply imbalance is determined by the ratio between unsold and total housing stock in 2014.
b  The estimates correspond to the assumption of total absorption of unsold stock at provincial level; a negative sign implies a supply shortage or unsatisfied demand.
c  The INE's household projections constitute the baseline scenario. Scenario 4 is the result of assuming that immigration will rise until 2019 and stabilise thereafter at the average observed in the period 2002-2014, along with headship rates that reach in 2019 the average annual growth of the period 2002-2014 or, if the latter is negative, that rise at a constant rate, to reach in 2029 the maximum headship rates recorded in the period 2002-2014.
d  The figures correspond to the housing stock of each group in 2014, in thousands.

estimate at the national level, obtained by aggregating the five groups of provinces considered, is given on the far right-hand side of each panel.

In the baseline scenario (the INE's household projections), it is estimated that in the groups with a low initial degree of imbalance (unsold stock of less than 2% of total housing stock) the process of absorption of the excess supply is relatively rapid, so that supply shortages are generated practically from the first year. Specifically, 85% of the total housing needs estimated in this

scenario (some 35,000 units per year) are generated in these groups. By contrast, in the groups with a high degree of imbalance the absorption process is much slower, since in these groups net household formation is lower and a large unsold stock persists (positive darker bar).

This pattern remains broadly unchanged under the more optimistic household formation scenario. That is, the absorption process is quicker in the groups with a smaller initial imbalance, although, after fifteen years, the excess supply disappears in all of them.

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unsold new housing stock for each province.[18] In other words, it is assumed that potential demand for primary dwellings is met from any point in each province, but no interprovincial mobility is assumed. Under this hypothesis, the geographical disparity between the distribution of unsold housing stock and household formation results in surplus supply in some provinces and a shortage of supply in others. Box 2 provides a detailed description of this geographical heterogeneity, which justifies conducting the analysis at a provincial level.

Assuming that construction will begin only when the housing stock disappears completely, and aggregating the provinces where there is an estimated shortage of supply, annual average housing needs for the whole country range between 40,000 and 200,000 units, according to the household formation scenario used (see Table 1). Although this is an extremely broad interval, the upper limit is well short of the housing completions recorded during the previous upturn (some 600,000 on average in 2000-2008) and only in the most expansive household formation scenario would similar levels to those observed in the late 1990s be reached (see the left-hand panel of Chart 6). In addition, the estimated housing needs for the country as a whole are heading upwards in all the scenarios considered, in keeping with projected household numbers.

At the same time, the existence of unsatisfied demand at an aggregate level is compatible with the continued existence of unsold housing stock over the next fifteen years, possibly amounting to more than half the level of stock in 2014 under the baseline scenario. On the contrary, in the most optimistic household formation scenario (scenario 4), the unsold housing stock will disappear completely in fifteen years (see the right-hand panel of Chart 6).

These findings, which are based on the assumption that no new housing needs are generated until all the unsold stock in each province is absorbed, may be somewhat limiting. Part of the supply available may not meet the demand for primary dwellings (it may be in the wrong geographical area, it may be undesirable or it may be destined for the second home market). Moreover, it is reasonable to assume that, at any point in time, there will be a certain amount of frictional housing stock (housing units will not necessarily be sold as soon as they are completed and placed on the market). One

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18  Including in the housing stock additional supply resulting from the construction (with a 24-month lag) of new housing that has already been granted permission to build.

UNSATISFIED DEMAND
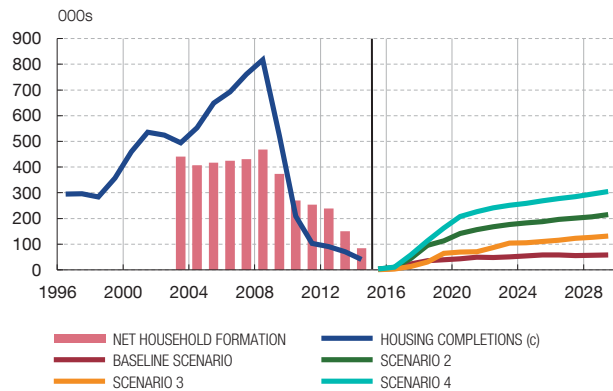
UNSOLD NEW HOUSING STOCK
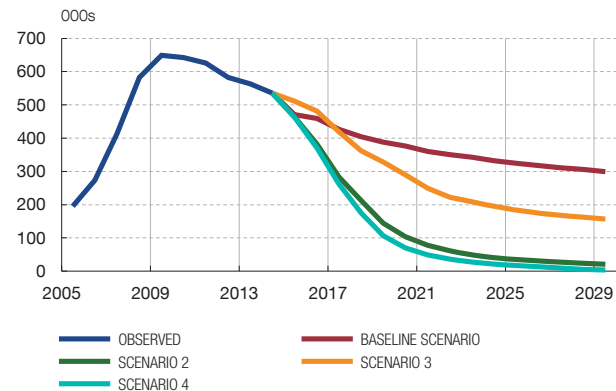


SOURCES: INE and Banco de España.

**a** The net household formation scenarios are as follows: the INE's household projections constitute the baseline scenario; scenario 2 is obtained by applying rising headship rates to the INE's population projections, assuming that they reach in 2019 the average annual growth for the period 2002-2014 or, if that figure is negative, by assuming that they increase at a constant rate, to reach in 2029 the maximum headship rates recorded in the period 2002-2014; scenario 3 assumes that immigration will rise until 2019 and stabilise thereafter at the average observed in the period 2002-2014, with headship rates constant at 2014 levels; and scenario 4 combines rising headship rates as in scenario 2 with rising immigration as in scenario 3.
**b** All the household formation scenarios assume full absorption of unsold housing stock at the provincial level.
**c** Proxied by new housebuilding approvals with a 24-month lag.

way to take these considerations into account is by setting a minimum threshold on the proportion between unsold and total housing stock below which it is considered that construction activity may start.[19] The threshold established in this article is a level of housing stock amounting to approximately 1.5% of the total housing stock, which is the average level of the years prior to the peak of the upturn.[20] On this assumption, housing needs would be somewhat higher, between 55,000 and 220,000 units according to the household formation scenario considered (see Table 1); these figures are still significantly lower than the construction levels recorded in the last upswing of the real estate cycle.

Conclusions

This article analyses the impact of demographic factors on the demand for primary dwellings over the next fifteen years and the possible implications for the flow of new housing construction. Several household formation scenarios are constructed, and then compared with the supply of available housing.

The INE's household projections are used as the baseline scenario and alternative scenarios are constructed that either allow the pattern of household formation to evolve towards a smaller average size, in keeping with the reduction observed in the period 2002-2014, or envisage higher population growth, owing to a larger inflow of immigrants than under the baseline scenario. The various scenarios give rise to very diverse household formation figures, illustrating the uncertainty surrounding the future path of this variable.

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19   In effect, the fact that the absorption process differs from one province to another should be taken into account. In coastal areas, for example, it could be assumed that the housing stock includes a very high proportion of secondary dwellings (and a very small proportion of housing destined to meet the demand for new primary dwellings). However, given the difficulties involved in making absorption process assumptions for each province, one uniform assumption has been used for all provinces.

20   Specifically, the average for the period 2004-2008 has been used, owing to the lack of data available for earlier years. Other authors, such as Maza and Peñalosa (2011), use a higher threshold (2%).

Consideration of the different net household formation scenarios and of the various assumptions regarding the degree of absorption of unsold housing stock gives rise to a very broad interval for the shortage of supply at the aggregate level, although in every case the shortage is smaller than the average level of completed housing during the upturn. As for the regional distribution, the estimated housing needs are concentrated in areas in which the imbalance between supply and demand in 2014 was small and which generally coincide with the areas where greater household generation is estimated.

These results should, in any event, be interpreted with caution, given the uncertainty surrounding the various assumptions on which the estimates are based, regarding both the household formation figures and the supply initially available and the degree to which it is aligned with current and future demand. The effective available supply would be smaller if housing that fails to meet the requirements for use as primary dwellings were excluded from the stock; the supply would be larger if all unoccupied housing were considered to belong to the available stock. Finally, it should be noted that this approximation of housing needs only considers the demand for primary dwellings, and thus excludes the second home component, which in Spain can play a fundamental role.

13.10.2015.

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