Real Estate

Sector Report

December 2018

SITUATION AND OUTLOOK

Spain's real estate sector: from recovery to expansion

How affordable is housing in Spain? Big data analytics

The technological revolution has reached the real estate sector

Macroprudential policies and the credit cycle

CaixaBank Research

Spain's real estate sector in 2019

Positive outlook

+5.7%
House prices

+7.3%
House sales

+4.0%
Residential investment

Pending challenges

Increase labour productivity in construction

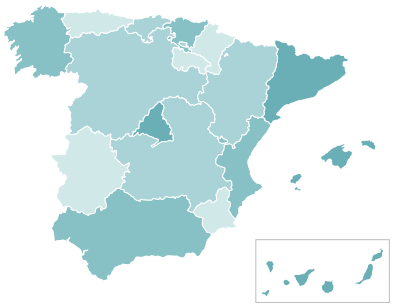
Attract skilled labour

Improve the sector's digitisation

The highly innovative PropTech sector is bound to revolutionise the value chain in the real estate industry

How much does it cost to buy a home in Spain?

The mortgage burden when buying a home varies greatly between autonomous regions



Mortgage burden (Q2 2018)

- > 27%
- 27%-24.5%
- 24.5-22.5%
- < 22.5%

Note: *The burden is the percentage of the median income allocated to mortgage payments in the first year. The median income comes from the wage structure survey (available up to 2016) and the Q2 2018 values have been extrapolated from wage costs (ETCL).*
Source: *CaixaBank Research, based on data from the Spanish College of Registrars and National Statistics Institute.*

Increasing household income, key to containing the growing mortgage burden

Note: *The burden is the percentage of the median household gross disposable income allocated to mortgage payments in the first year.*
Source: *CaixaBank Research, based on data from the Bank of Spain.*

SITUATION AND OUTLOOK

Spain's real estate sector: from recovery to expansion

The new expansionary cycle in Spain's real estate sector is getting stronger quarter by quarter. House sales have been posting double-digit figures for the past three years, there is strong growth in construction and prices are clearly on the up. What will the future bring?
As explained in this Report, this positive trend is expected to continue in the sector, both because of the Spanish economy's good performance and also the healthy state of the industry itself.

The real estate sector is crucial for Spain's economy, both from a macroeconomic perspective and because of its large contribution to GDP and also in economic terms for families, as the home tends to be the main asset owned by households. This is particularly important in Spain as it is one of the European countries with the largest share of home owners (77% compared with 66% in the euro area),[1] although the recent economic crisis has made it much more difficult for young people to buy their own home. The real estate sector is still of vital importance for the economy as a whole. Although its capacity has adjusted sharply over the past decade, the construction industry still accounts for 5.8% of GDP and employs 6.2% of all workers.[2] It is therefore crucial to keep a close eye on the trends in the real estate market and its future prospects.

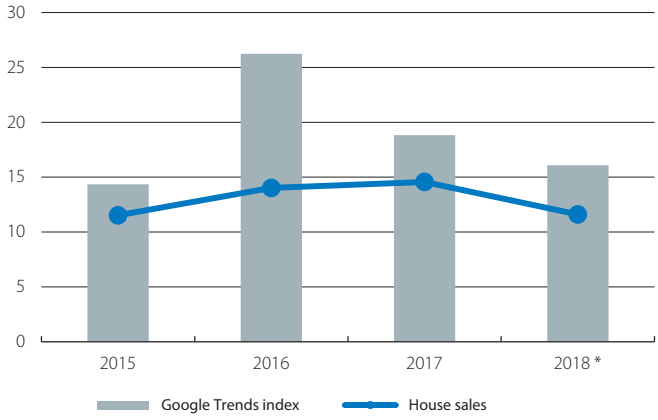
The real estate sector is currently in an expansionary phase that will continue over the next few years

After a long period of severe contraction, Spain's real estate sector started to recover in 2014 and it is now clearly in an expansionary phase. The data speak for themselves: from the minimum values posted in 2014, annual house sales have risen by 13% on average, new building permits have tripled and house prices have increased by 24%.[3] What factors lie behind this strong recovery in the real estate market over the past few years? Will they continue to have a positive effect in the future?

Let's begin by looking at the demand indicators. The most recent data show that house sales are clearly back to normal levels, breaking through the threshold of 500,000 units sold in August 2018 (cumulative data over 12 months).[4] This gradual normalisation in the growth rate can therefore be interpreted as a positive sign: sales have risen by 11.0% this year up to September, slightly below 2017's figure of 15.4%. The data provided by Google Trends regarding searches for housing on the internet suggest this upward trend will continue: searches are still numerous although, as can be seen in the chart below, the intention to buy housing has moderated off slightly in the past few months.[5]

Google searches of «comprar piso» (buy apartment) and house sales

Annual change (%)



Note: ** Google Trends data for 2018 up to October and house sales up to September.*
Source: *CaixaBank Research, based on data from Google Trends and INE.*

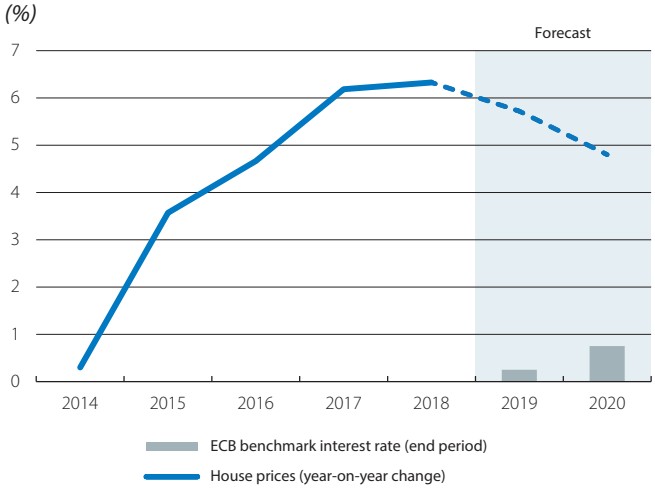
[1] Eurostat, «The European Union Income and Living Conditions Statistics».
[2] Data from Q2 2018, national accounts and number of workers according to Spain's labour force survey.
[3] Increase in the National Statistics Institute's house price index between Q1 2014 and Q2 2018.
[4] House sales according to the National Statistics Institute.
[5] See the article «House purchases in 2018: what can Google tell us?», published in MR03/2018 by CaixaBank Research (http://www.caixabankresearch.com/en/house-purchases-2018-what-can-google-tell-us).

Improvements in income, employment and financial conditions are helping to boost house sales while demand by foreign buyers is also notably strong

The demand for housing will continue to be supported by better employment conditions. Consequently, although the job creation rate is expected to slow down (from 2.5% in 2018 to 2.1% in 2019), gross disposable household income could still increase by around 4% annually thanks to wage improvements which are already starting to appear. The bulk of the evidence available also suggests that financial conditions will continue highly accommodative as the European Central Bank (ECB) will only normalise its monetary policy very gradually. This point is particularly important as there have been warnings of a shift in ECB policy and its potential impact on the real estate sector. However, CaixaBank Research forecasts suggest the ECB benchmark interest rate will remain below 1% for the next two years.

Trend in interest rates and house prices

(%)

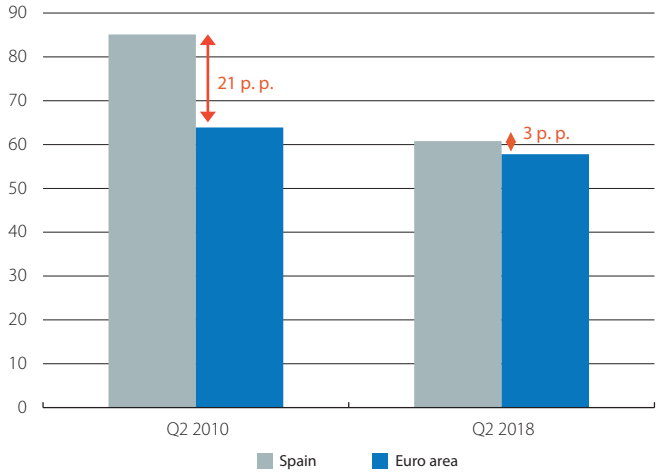


Source: *CaixaBank Research, based on data from the National Statistics Institute and Bloomberg.*

In any case, we should remember that the ECB's decision to normalise monetary policy results from the considerable improvement in the euro area's economic situation compared with when these exceptional measures were first adopted. In particular, Spanish households are now in a much healthier financial situation after the extensive deleveraging carried out in the past few years: household debt has fallen from 85.1% of GDP in Q2 2010 to 60.8% in Q2 2018, very close to the euro area average (57.8% of GDP). Moreover, this household deleveraging has occurred at the same time as strong growth in the flow of bank credit to purchase housing: the number of mortgages grew by 8.5% year-on-year in September 2018 and the volume of new loans to purchase housing rose by 17.4%, cumulative for the year up to October. On the other hand, the growing trend for fixed rate mortgages observed in the past few quarters will act as «insurance» against rising interest rates (see the article «Macroprudential policies and the credit cycle» in this *Sector Report* for more details on the recent trends in Spain's mortgage market).

Household debt

(% of GDP)



Source: *CaixaBank Research, based on data from the Bank of Spain and Eurostat.*

Another demand factor becoming particularly relevant in the recent recovery phase has been housing demand by foreign buyers. Foreigners were responsible for 17% of all purchases made between 2014 and 2017. This factor could ease slightly over the coming quarters due to the slowdown in the tourism sector, particularly arrivals by European tourists (British and Germans), who tend to be the most typical buyers of holiday homes in Spain. However, from an international investor's point of view, Spain's real estate sector is still highly attractive, especially because of the solid final demand in many zones.[6]

Supply indicators, on the other hand, all point in the same direction: in real terms, investment in residential construction grew by 6.5% year-on-year in Q3 2018; the number of registered workers affiliated to Social Security in construction increased by 6.1% year-on-year in November (much higher than the 2.9% for the economy as a whole), and confidence in the sector has improved considerably. Specifically, the European Commission's confidence index for the construction sector was positive in September 2018 for the first time in

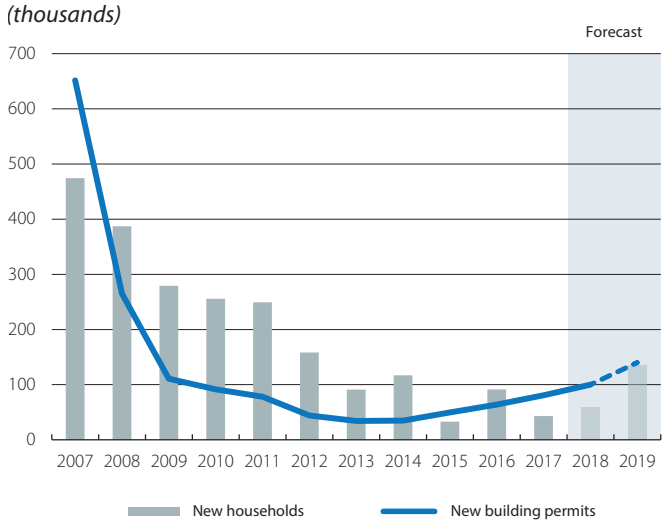
[6] In this respect, foreign capital inflows in real estate activities are still very strong. Specifically, in the first six months of 2018, net flows of foreign direct investment into the real estate sector totalled 990 million euros, 31% more than same period in 2017.

over 10 years (we have to go back to October 2007 to find a positive value for this indicator).

Construction activity is getting back to normal: investment is growing, the number of registered workers affiliated to Social Security is increasing and the sector's confidence indices are rising

In spite of such high growth rates in the sector's different activity indicators, the recovery does not seem to be excessive. Consequently, although the number of new building permits has tripled over the past four years, the current level (95,000 permits in the 12 months up to September 2018) represents only one-seventh of the average number of permits granted between 2000 and 2006 (640,000). Moreover, the current volume of new properties being built is far below the supply that tends to be considered as absorbed annually due to structural factors. Specifically, Spain's National Statistics Institute (INE) estimates the net household creation at around 135,000 units every year on average in the period 2019-2025.[7] We can therefore conclude that the supply of housing still has a long way to go and we expect its growth to continue over the coming years.

New building permits and new households
(thousands)



Source: *CaixaBank Research, based on data from the Ministry of Public Works and National Statistics Institute.*

In fact, liquidity indicators for the real estate market, such as the time taken for housing to be sold, show that the number of months required to sell a property has decreased, suggesting supply still needs to grow, especially in those zones with little new housing available, in order to meet the growing demand and thereby curb any excessive growth in prices during the sector's current expansionary phase.

As a result of the combination of strong demand and a supply which, although dynamic, is still relatively low, house prices are clearly rising. Specifically, the house prices published by Spain's National Statistics Institute, based on sales, increased by 6.8% year-on-year in Q2 2018. This growth in house prices looks like continuing in 2019, albeit more moderately due to the slight slowdown in demand and expected increase in the number of housing completions which will come onto the market.

CaixaBank Research predicts that growth in house prices will remain above 5% in the coming quarters

Since gross disposable household income is also still increasing, this will cushion the impact of higher prices on house affordability. In the next article in this *Sector Report*, «How affordable is housing in Spain? Big data analytics», we analyse in detail the recent trends and outlook for the mortgage burden and housing affordability.

Lastly, it is also important to note one key aspect of the current recovery in Spain's real estate market: namely the fact that this is highly heterogeneous in geographical terms. Large cities such as Madrid and Barcelona and tourist destinations around the Mediterranean and on the islands were the first regions to recover. The real estate sector in these locations is now in a more mature phase of the cycle and, in some cases, a marked slowdown can even be observed in the growth rate of house purchases and prices. However, there are a growing number of cities and regions where a recovery is visible, especially in terms of demand, such as Seville, Malaga and Valencia. Nevertheless, construction is still relatively sluggish in some areas.

Spain's real estate sector: facing the future with both optimism and caution

In short, the outlook for Spain's real estate sector over the coming years is promising and there is good reason to be confident and optimistic about this expansionary cycle continuing. At the same time, however, the downside risks hovering over the global macroeconomic scenario suggest the future should also be faced with some caution.

[7] Demand for new housing, in addition to net household creation, must also take into account demand for second homes, foreign demand and replacement due to the depreciation in the stock of housing.

Five key aspects of Spain's real estate sector

1. Spain's real estate sector is in a clearly **expansionary** phase

2. House sales are still rising at a **good rate**

3. In supply terms, construction is growing, albeit from **very low levels**

4. The rate of growth in house prices will remain **above 5%** over the coming quarters

5. The market is **markedly heterogeneous in geographical terms**

How affordable is housing in Spain? Big data analytics

The sustained growth in house prices in Spain and the fact that the ECB is about to start normalising its monetary policy has once again sparked discussions regarding how difficult it is for Spanish families to buy their own home. Big data analytics can help us to detect those areas where the affordability ratio has worsened the most and how housing demand is shifting towards neighbouring zones to the main cities and tourist destinations.

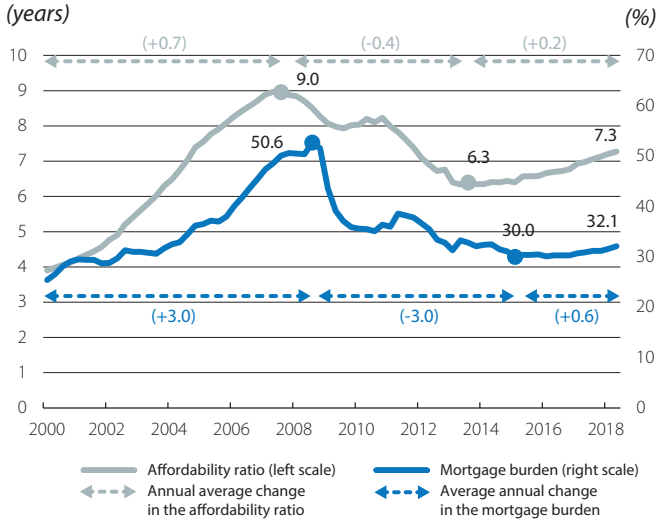
Buying a home is one of the most important financial decisions a household takes: owning one's own home tends to be the main way for families to save.[1] It is therefore important to analyse developments in the difficulties faced by households when trying to buy a home in the current expansionary cycle. One way of analysing this aspect is by observing the ratio between house prices and annual household income. This is precisely what is measured by the affordability ratio calculated every quarter by the Bank of Spain.[2]

In 2018, 7.3 years of entire income were required to buy a home, one year more than in 2013

A household currently devotes 7.3 years of its entire income to buying a home. In other words, one more year's income is required than in 2013 (when the real estate market bottomed out), although this figure is still much lower than the peak of 9 years reached in 2007. It is also important to point out that the rate at which this ratio is increasing in the current recovery phase is much more gradual than during the real estate boom. Specifically, +0.2 points per year between Q2 2013 and Q2 2018 compared with an average annual increase of +0.7 from 2000 to 2007.

As most households require external financing to buy their own home, another frequently used indicator to assess how difficult it is to buy housing is the mortgage burden, which measures the total mortgage payments required in the first year after buying a home as a percentage of the median household's gross disposable income.[3] This ratio therefore also takes into account the trend in mortgage interest rates (as well as house prices and household income). Thanks to the low interest rates encouraged by the ECB's monetary policy, the trend in this ratio was downward until the beginning of 2015, when it stood at 30%, since then rising moderately to 32.1% by Q2 2018.

In Spain, the affordability ratio and mortgage burden are increasing gradually



Notes: *The affordability ratio is the ratio of the house price to the median household's gross disposable income (GDHI). The mortgage burden is the percentage of the GDHI required to meet the mortgage payments over the first year.*
Source: *CaixaBank Research, based on data from the Bank of Spain.*

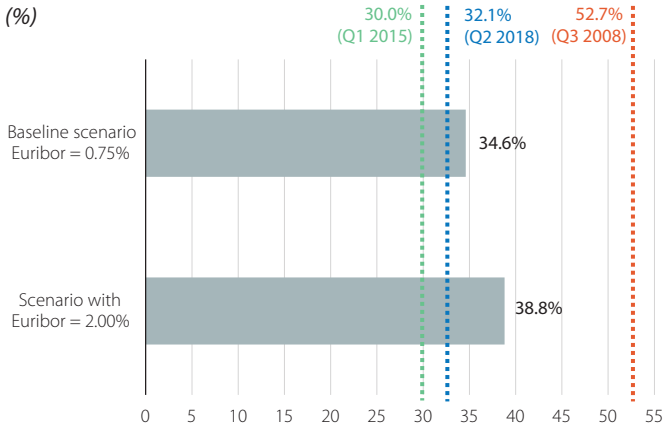
The median household must allocate 32.1% of its gross income to meet the mortgage payments in the first year after buying a home

[1] In Q2 2018, real estate assets accounted for 78% of all household wealth in Spain.
[2] The affordability ratio is the ratio between the price of a typical home and the gross disposable income of the median household (GDHI). A home of 93.75 square metres is assumed. Median household income is the most representative as half the households have a lower income and the other half, higher.
[3] For this indicator, the Bank of Spain uses the payments required for a 20-year mortgage to finance 80% of the house purchase price.

The ECB's monetary policy normalisation is crucial due to the impact it might have on the evolution in interest rates and the effort required to buy a home. CaixaBank Research expects this normalisation to be very gradual. With the 12-month Euribor rate around 0.75% at the end of 2020,[4] the mortgage burden would increase from 32.1% in Q2 2018 to 34.6% in Q4 2020. If the increase were much larger and interest rates reached 2%, this burden would rise to 38.8% (a high figure but still much lower than the 52.7% posted in Q3 2008). In fact, the risks are downside. This is backed up by the expectations of financial markets regarding the future evolution of interest rates, which are somewhat lower than the CaixaBank Research forecasts.

What will be the mortgage burden in 2020?

(%)



Note: *The burden is the percentage of a median household's gross disposable income allocated to mortgage payments in the first year. 5.3% average growth in house prices is assumed for 2019-2020 and a 4.5% increase in gross income.*
Source: *CaixaBank Research, based on data from the Bank of Spain.*

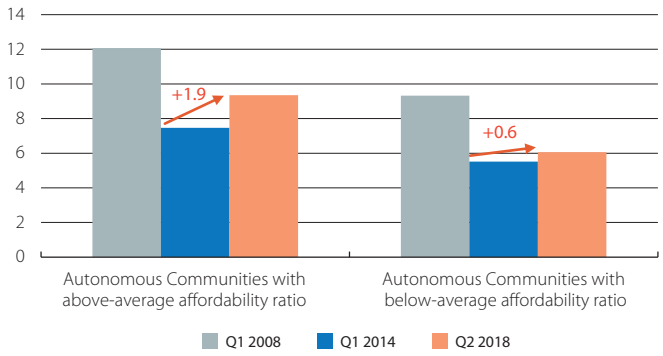
We therefore expect the impact of rising interest rates on house affordability to be moderate. However, given that we expect house prices to continue rising, households need to improve their disposable income for house affordability to remain at the same level as today. In this respect, we expect both the job creation rate and wage trend to boost growth in household income. More specifically, in the coming years employment will probably grow by around 2% and, after years of moderation, the upward trend in wages that can now appearing will consolidate as the unemployment rate continues to fall.

Buying a home in the Balearic Islands is not the same as buying one in Extremadura: it is much more difficulty to buy a home in certain cities and tourist destinations

In spite of the favourable outlook at a national level, there are significant geographical differences in house affordability. At the level of autonomous region,[5] the number of years of income required to buy a home varies greatly. For example, in the Balearic Islands or the Community of Madrid, the effort to buy a house is double that in Extremadura or Castilla-La Mancha, the regions with the most affordable housing according to Spain's Ministry of Public Works. Moreover, the real estate sector is recovering at different speeds with large regional variations in terms of growth in house prices,[6] widening the gap between housing affordability ratios. The next chart illustrates this phenomenon: those regions with above-average affordability ratios are those that have also seen more growth in these ratios between Q2 2014 and Q2 2018. On the other hand, affordability ratios have remained almost the same in those regions with the lowest values.

The affordability ratio is increasing the most in those Autonomous Communities where it is the highest

Average affordability ratio for each group (years)

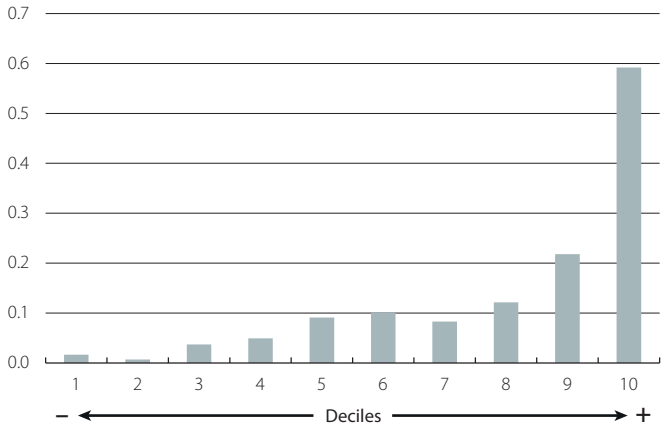


Note: *The affordability ratio is calculated as the price per square metre multiplied by 93.75 (average home size according to the Bank of Spain) divided by the median household income. House prices are produced by linking the Ministry of Public Works series with that of the National Statistics Institute (available as from 2007). The median income comes from the wage structure survey (available up to 2016) and the 2017 and 2018 values have been extrapolated from the wage cost survey.*
Source: *CaixaBank Research, based on data from the Bank of Spain and National Statistics Institute.*

[4] Note that this is an increase of 0.90% compared with the present levels (–0.15% at the end of October 2018).
[5] The affordability ratio at the level of autonomous region is calculated as the price per square metre multiplied by 93.75 (average home size according to the Bank of Spain) divided by the median household income. House prices are produced by linking the Ministry of Public Works series with that of the National Statistics Institute (available as from 2007). Median income comes from the wage structure survey (available up to 2016) and the 2017 and 2018 values have been extrapolated from the wage cost survey.
[6] For an analysis of this phenomenon, see «Global synchronisation of house prices: causes and consequences» published in MR06/2018 by CaixaBank Research (http://www.caixabankresearch.com/en/global-synchronisation-house-prices-causes-and-consequences).

The affordability ratio is increasing the most in those municipalities where it is the highest

Change between 2017 and 2018 (pp)



Note: *Municipalities have been divided into 10 groups by their affordability ratio (deciles).*
Source: *CaixaBank Research, based on data from AIS.*

This phenomenon can also be seen at a municipal level. If we divide the 7,857 municipalities for which information is available into 10 groups (deciles), we can see that those municipalities with the highest affordability ratio (decile 10) are the ones posting the largest increase in the ratio in the past year (0.6 points on average). The municipalities in the rest of deciles have posted more modest increases, below the average rise at a national level (0.3 points between Q2 2017 and Q2 2018, according to the Bank of Spain).

41% of Spain's population lives in municipalities with a high and rising affordability ratio, so it comes as no surprise they believe housing is becoming less affordable

Taking into account the fact that the 760 municipalities of decile 10 contain 41% of Spain's total population, it is not surprising that a large part of the population believes housing is becoming less affordable. Moreover, the geographical distribution of the municipalities with a high and rising affordability ratio is not homogeneous. 73% of the municipalities in the Balearic Islands (86% of the population) are in this decile. These are followed by the provinces of Malaga (53% of the municipalities, 86% of the population), Girona (53% of the municipalities, 56% of the population), Las Palmas (53% of the municipalities, 59% of the population), Barcelona (31% of the municipalities, 80% of the population) and Madrid (20% of the municipalities, 80% of the population). We can therefore see that this issue affects major cities and tourist destinations more than other locations.

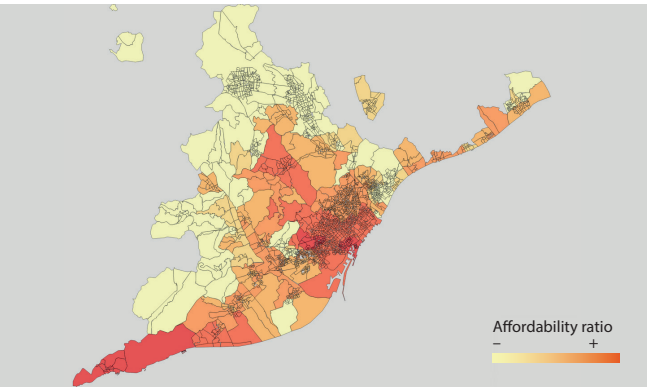
One consequence of the sharp rise in the affordability ratio in Spain's major cities is that demand has started to shift towards neighbouring zones in a search for more affordable properties. In turn, this has pushed up the affordability ratios of districts in the outskirts and neighbouring towns. In the maps on the next page of Barcelona and Madrid, we can see that less affordable housing is spreading from the central and prime zones towards the outskirts and a larger number of municipalities in the metropolitan area.

In short, after more than four years of sustained growth in house prices, it can be seen that the greater difficulty in buying a home is concentrated in certain cities and tourist destinations, zones whose house prices were already above the national average. This represents a significant challenge as public policies need to be designed that fit each particular case. In this respect, an accurate diagnosis of the situation using big data could be a good starting point.

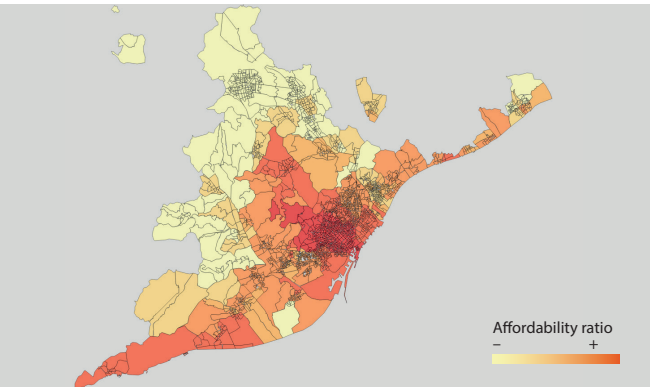
Evolution in the affordability ratio in Barcelona and Madrid

BARCELONA

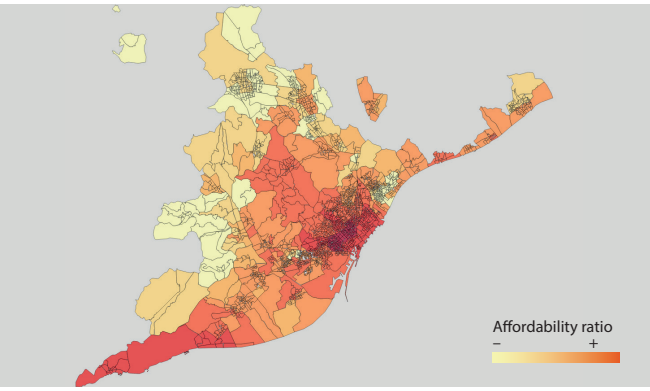
2016



2017

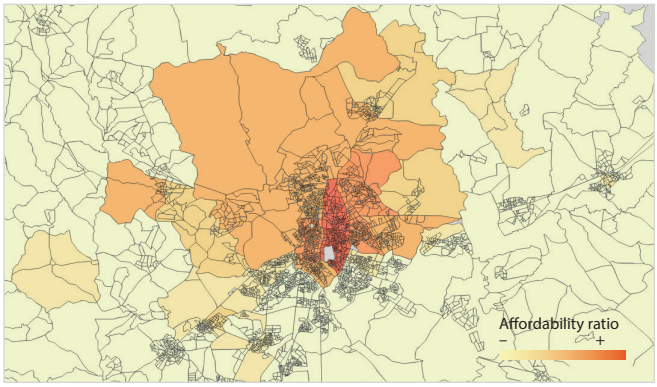


2018

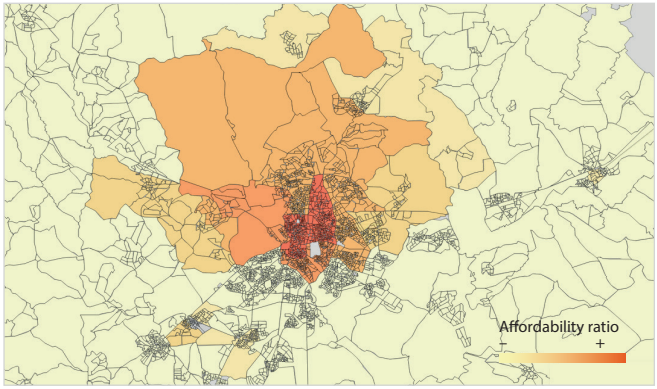


MADRID

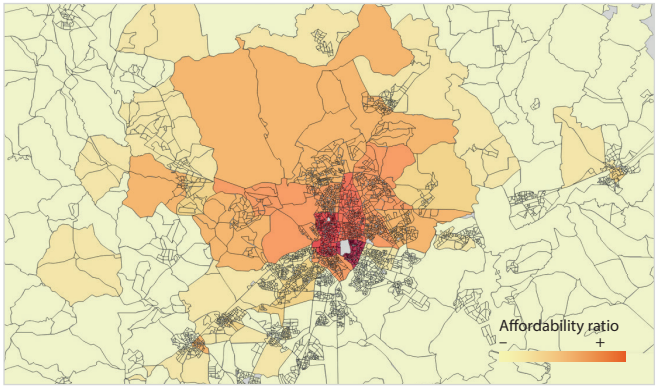
2016



2017



2018



Source: *CaixaBank Research, based on data from AIS.*

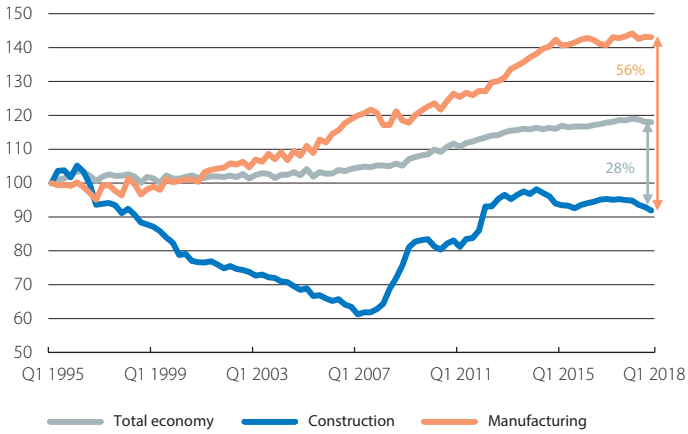
The technological revolution has reached the real estate sector

The booming PropTech sector, made up of highly innovative companies that make intensive use of new technologies, is destined to revolutionise the real estate sector's value chain. Digitisation also has huge potential to boost productivity in the construction industry, which has grown very slowly in most developed countries over the past few decades.

While productivity in Spain's economy as a whole has improved by 18% since 1995, in the construction industry it has fallen by 8%.[1] The difference is even greater when compared with manufacturing, whose productivity has risen by 43% in the same period. This phenomenon is not exclusive to Spain's construction industry: a report by the consulting firm McKinsey[2] shows that annual global growth in labour productivity in construction was just 1% in the past two decades, much lower than the growth for the world economy as a whole (2.8%) and for other sectors, such as manufacturing (3.6%).

Productivity is growing very slowly in the construction industry

Index (100 = Q1 1995)



Note: *Apparent labour productivity (gross value added / hours worked).*
Source: *CaixaBank Research, based on data from the National Statistics Institute.*

Investment in technology, company consolidation and human capital: the three keys to improving productivity in the construction industry

One of the main reasons why construction performs worse than other sectors in productivity terms is its relative lack of investment in innovation and technology over the past few decades. This is particularly noticeable when we compare construction with manufacturing, which led the field in automating production by using robots as far back as the 1990s, in addition to its widespread use of digital technologies today.[3] However, the construction industry is among the least digitised sectors. According to the McKinsey Global Institute Digitization Index, construction comes second from bottom in the United States and bottom in Europe.

Construction is one of the least digitised sectors: it is at the bottom of the McKinsey Global Institute index both in the United States and Europe

However, lower investment in technological capital is not the only reason for construction's low productivity growth over the past few decades. The failure of the sector's companies to consolidate, with a large number of small firms existing side by side with a handful of large ones,[4] also has a direct effect on productivity as company size is closely related to the degree of professional business management, economies of scale, access to diversified sources of financing and the

[1] In this article we refer to apparent labour productivity, calculated by dividing the sector's gross value added by the number of hours worked. The downward trend in productivity in construction was interrupted during the real estate crisis (2008-2014) when job losses in the sector outnumbered the decline in production. Since 2014, however, the construction industry's productivity has fallen by 6% in cumulative terms.

[2] McKinsey Global Institute (2017), «Reinventing construction: a route to higher productivity», February.

[3] See the Dossier «Industry 4.0», published in the MR11/2016 of CaixaBank Research, for an analysis of the impact of new technologies on industry.

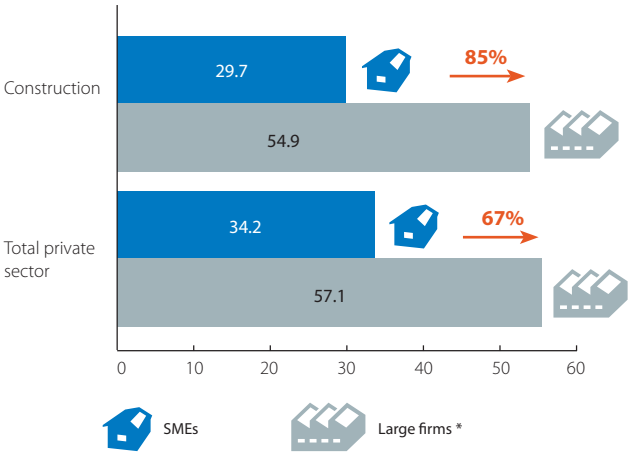
[4] Large firms (250 employees or more) account for 0.03% of all construction companies, employing 18.2% of the sector's workers. These figures are clearly lower than the share of large firms in the overall economy (0.12% for large firms with 38.3% of employment).

possibility to offer workers continued training. The figures for labour productivity by company size are highly revealing in this respect: large construction firms are 85% more productive than small ones, a bigger gap than the difference for all private companies in Spain (67%).

If the sector could consolidate, construction would benefit from significant gains in productivity: large firms are 85% more productive than small ones

Productivity by company size

Gross value added per employee (thousand euros)



Note: ** Large firms have 250 employees or more. Data from 2014.*
Source: *CaixaBank Research, based on data from Eurostat.*

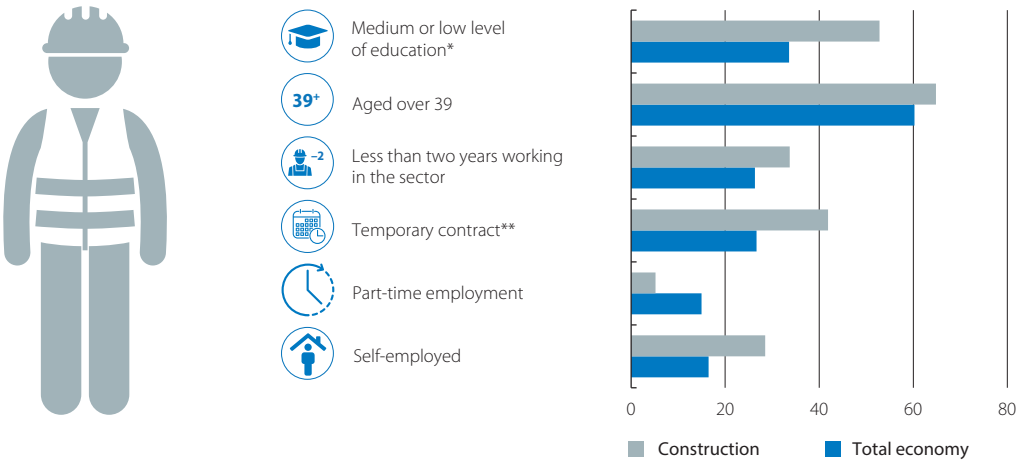
Another factor affecting the sector's productivity is human capital. An analysis of the average profile of construction workers reveals a lower level of education and less work experience in the sector compared with workers in the other sectors. Also notable is the large proportion of temporary contracts and self-employed workers, both aspects related to the greater flexibility required to adjust the number of workers to the construction contracts, but with a negative effect on productivity as companies tend to have less incentive to invest in continued training for temporary or subcontracted self-employed workers. Another feature is the older average age of construction workers, a cause for concern since many qualified workers are approaching retirement age and young people do not seem to be very interested in working in the sector.[5] According to the World Economic Forum,[6] construction needs to attract new talent and workers with the necessary skills to be able to adapt to new technologies. Moreover, the huge job losses suffered by the construction industry between 2008 and 2013 also make it difficult to find qualified professionals now.

A lack of training, the temporary nature of employment and older workforce are also negatively affecting the sector's productivity

[5] See «Cualificación y formación en la industria de la construcción en España», Observatorio Industrial de la Construcción.
[6] See World Economic Forum (2018), «An Action Plan to Solve the Industry's Talent Gap», February. Available at: https://futureofconstruction.org.

Profile of construction workers

(% of all employees)



Notes: ** Percentage of employees whose maximum attainment is mandatory secondary education. ** The temporary rate is calculated out of the total wage-earners. Data from 2017.*
Source: *CaixaBank Research, based on data from the National Statistics Institute and the Ministry of Employment and Social Security.*

Digitisation: a springboard to boost productivity in construction

In the past few years, a new ecosystem of innovative companies has begun to flourish, known as PropTech, suggesting a much more promising future for the productivity trend in the real estate sector. Many of these innovations do not only impact the actual construction phase of real estate but affect the sector's entire value chain. In other words, intensive use of new technologies is not only transforming how homes are designed and built but is also changing how property is sold, leased and managed, and are also leading to changes in the types of financing for this process. The diagram below attempts to summarise the different phases in the real estate value chain and provides some examples of technologies that affect, or will affect, each one of them.

New technologies are not only transforming how homes are designed and built but also how property is sold, leased and managed and how it is financed

Machine learning and big data are having a particularly big effect on the initial stage of deciding where to locate a property. For example, supply and demand by zone can be cross-referenced, such as the available plots of land, the socio-demographic characteristics of the town in question or the type of property demanded in each zone, designing the building more in line with local preferences, monitoring recent trends in the local real estate market or having relevant information on the public services available. These databases can be fed, for example, by data from statistics, from registers or one's own data obtained, for example, from photographs taken by drones.

Big data can also be used at the financing stage of a property development, for instance to assess the appropriateness of a location, as a complement to the traditional analysis for property development loans. New types of financing are gradually gaining ground, such as real estate crowdfunding, in which projects are financed jointly by different investors, each sponsoring a small portion. This makes property investment accessible to agents who otherwise would not have enough capital to finance the construction of real estate.

The real estate value chain and some examples of technologies that can be applied at each stage

Initial location stage	Financing property development	Development and construction	Real estate intermediaries	Purchases and mortgages	Use of the property
• Smart tools to locate developments (big data) • Geo-location of land • Interactive maps with socio-demographic characteristics (big data)	• Crowdfunding to finance property developments • Big data to analyse the appropriateness of the project • Machine learning to automatically value assets	• Building Information Modelling (BIM)* • Industrialisation of the construction process • Robotics, 3D printers, drones to monitor the progress of the building work • Personalising the property via a permanent contact platform with the builder	• 100% online estate agents • Artificial intelligence to optimise sales team activities • Virtual and augmented reality instead of visits in person • Property portals with personalised catalogues of available properties • Peer-to-peer platforms	• Blockchain to draw up contracts and a payment system without intermediaries • Online mortgages • Peer-to-peer loans for the end buyer • Permanent platform for contact between the bank and buyer of the property	• Smart homes, Internet of Things (IoT) to control devices remotely • Sharing and co-living platforms • Virtual assistants offering domestic services • Smart buildings

Value chain

Note: ** Building Information Modelling (BIM) is a system to design, manage and use construction projects that gathers together all the information provided by different professionals into a centralised platform and can take advantage of all these data at different stages in the project's life cycle.*
Source: *CaixaBank Research.*

During the construction stage, the most typical example is BIM technology (Building Information Modelling), a system to design, manage and run building projects that collects all the information provided by different professionals in a centralised platform and uses these data in the different phases of the project's life cycle. For example, this tool can monitor, in 3D and real time, any modification in the initial project by analysing the impact on costs and completion time. It is therefore very likely to improve efficiency. There are currently several international initiatives underway to encourage a more widespread use of BIM.[7]

Real estate agency had already been revolutionised years ago, by the appearance of the internet. Property portals have now established themselves as a main source of information, in detriment to traditional agents. When drawing up a contract, blockchain technology has great potential to change how sales are registered. With regard to mortgages, online loans and platforms providing continuous contact between banks and house buyers offer clients a user-friendly service that is more in line with the consumer preferences of today.

Lastly, technology can also offer advantages once the property is being used. For example, thanks to the Internet of Things (IoT), work can be carried out for maintenance, to improve energy efficiency and also security automatically and with a remote control facility (smart buildings). Property maintenance can even be optimised by using models that predict the potential impact of certain meteorological phenomena, carrying out preventative work to reduce such incidents.

Many of these technologies have already been adopted while several others will soon become a reality. However, their use is far from widespread. The sector's ability to digitise more quickly will determine how productivity develops in the future. This is beneficial for companies because it improves their profitability but also for society as it will provide more affordable, high quality homes.

[7] See the World Economic Forum (2018), «An Action Plan to accelerate Building Information Modelling (BIM) Adoption», March. Available at: https://futureofconstruction.org.

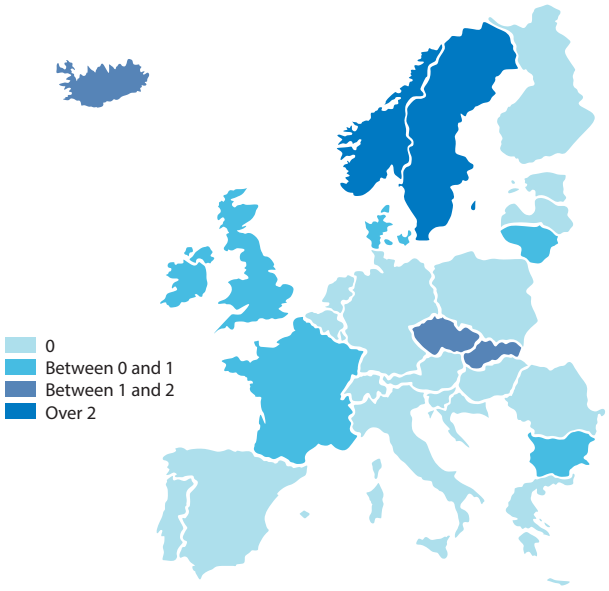
Macroprudential policies and the credit cycle

In some euro area countries, the regulatory authorities are now closely monitoring credit growth to make sure it does not become excessive and end up jeopardising financial stability. To keep the credit market in check, countries such as France, Ireland and the United Kingdom have already adopted what are known as «countercyclical macroprudential measures». Spain's credit cycle, however, is in a very different situation and such measures are unlikely to be implemented in the near future.

What are macroprudential measures and why are some countries implementing them?

Financial systems tend to be procyclical; i.e. expansionary phases of the cycle are usually accompanied by credit growth which accentuates booms in the economy. Likewise, a fall in credit also tends to accentuate recessionary phases. Macroprudential policy, which aims to prevent systemic crises and improve financial stability, contains a battery of instruments whose goal is to cushion credit cycles and thereby prevent excessive risk and imbalances. One of these important measures is the countercyclical capital buffer (CCyB), through which banks accumulate capital during boom periods which can then be used to absorb losses during recessionary times. At present, 11 European Union countries have activated this capital buffer for the banks under their supervision, notably France, Ireland and the United Kingdom given their proximity to Spain.

Countercyclical capital buffers across countries
(%)



Note: *Includes countries that have announced this measure but have yet to implement it.*
Source: *CaixaBank Research, based on data from the ESRB.*

Other measures also aim to encourage the adoption of prudent criteria when granting credit whenever banks' own standards appear too lax. Most of these standards are applied to households, the most vulnerable agents, and to mortgage loans since these represent the biggest financial burden for households. There are four particularly important measures in this area: (1) Limits on loans related to the value of the property acquired (loan-to-value or LTV); (2) Limits related to the debtor's payment capacity (debt-to-income, DTI or debt-service-to-income, DSTI); (3) Limits on the payback period and (4) Limits on the bank's exposure to the real estate market. As a case close to Spain, we can look at the measures implemented in Portugal last July, establishing limits on granting mortgages for more than 90% of the property's appraised value, with a debt-to-income ratio of more than 50% and payback periods longer than 40 years.[1]

The countries that have implemented such measures are, in general, responding to a strong and prolonged growth in credit to households, as in the case of France, Slovakia, Estonia, Slovenia and Lithuania, to excessively high levels of household debt, as is the case of Denmark, the Netherlands, Sweden and the United Kingdom, or to the need to encourage the adoption of more prudent credit standards, as is the case of Portugal.[2]

[1] The payback period for mortgages will have to converge to 30 years by 2022. For consumer credit, a maximum payback period was established of 10 years.
[2] The case of Ireland is more particular and is due to its oversized banking sector, making the economy more vulnerable to any changes in cycle (the ratio of bank assets to the country's GDP is 24% higher than the euro area figure). Moreover, Irish regulators have stated that such macroprudential measures needed to be adopted in order to strengthen a banking system still suffering from a high NPL rate (7.0% compared with 3.6% in the European Union).

The aim of macroprudential policy is to help safeguard the stability of the financial system by making it more resilient and reducing systemic risks

Indicators of credit and household debt

Data from Q2 2018*

	Household debt (% of GDP)	Debt-service-to-income (%)**	Change in credit over the past two years (%)
Denmark	118	15.0	2.0
Netherlands	104	16.1	10.9
Sweden	88	11.4	5.3
United Kingdom	86	9.4	3.8
Portugal	68	6.7	-1.3
Finland	67	7.2	4.7
Spain	61	6.6	-1.0
Belgium	61	7.9	15.9
France	59	6.2	10.7
Euro area	58	-	5.8
Greece	55	-	-13.0
Germany	52	6.1	6.7
Austria	50	-	6.8
Ireland	44	-	1.8
Slovakia	42	-	25.8
Italy	41	4.4	0.9
Estonia	39	-	13.5
Slovenia	27	-	14.0
Lithuania	22	-	14.9
Latvia	22	-	-6.5

Notes: ** The shaded areas are countries implementing some kind of countercyclical macro-prudential measure. ** Defined as the ratio of interest and capital payments to income.*
Source: *CaixaBank Research, based on data from Eurostat, ECB and BIS.*

Use of other measures related to standards for granting credit

Countries that have implemented a measure since 2013

	European Union	Euro area
Debt-to-income limits	14	8
Loan-to-value limits	15	7
Limits on payback periods and rates	8	5
Limits on exposure to the real estate market	11	5

Source: *CaixaBank Research, based on data from the ESRB.*

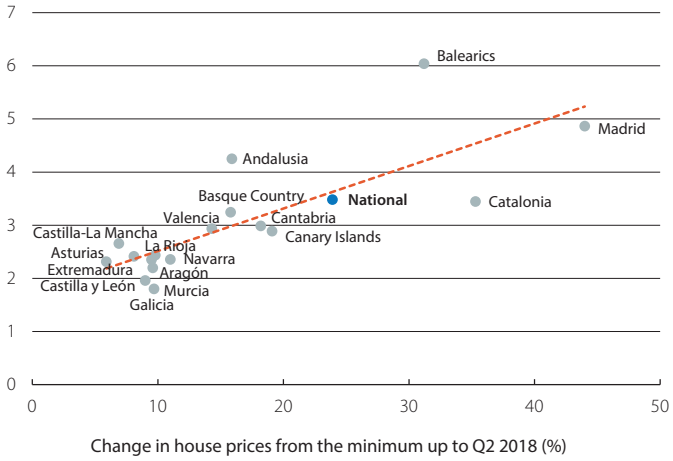
And Spain: where is it in the credit cycle? Can we expect macroprudential measures in the near future?

Spanish households have deleveraged considerably. In Q2 2018, household debt stood at 61% of GDP, a level very close to that of our euro area partners (58%) after correcting by 24 pp of GDP since the peak reached in 2010. This deleveraging led to a sharp contraction in the portfolio of household credit, which has needed almost eight years to start to recover. Finally, in September 2018, the outstanding balance of credit returned to growth, albeit modest (+0.2% year-on-year), as substantial repayments in the mortgage portfolio have been offset by strong growth in consumer credit (13% year-on-year in October 2018) and by the dynamic trend in new mortgage loans (+17% year-on-year cumulative between January and October 2018). Over the coming quarters, the mortgage portfolio is expected to continue its recovery while growth in the consumer credit portfolio will also continue to slow down towards more balanced figures, so their different growth rates will tend to cancel each other out. In other words, no excessive growth in household credit is expected in the medium term.

Spanish households have deleveraged considerably since the crisis and no excessive growth is expected in credit in the medium term

New mortgage loans and house prices by autonomous region

Mortgages granted in the past 12 months (% of GDP)



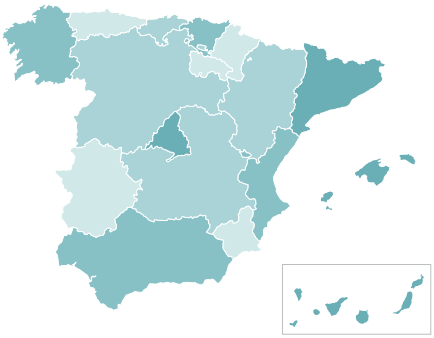
Source: *CaixaBank Research, based on data from the National Statistics Institute.*

Continuing with mortgage loans, the main source of debt for households (74% of all debt), new loans may be growing by double-digit figures but this rate is still low compared with those recorded before the crisis. Specifically, new loans granted in the past 12 months total 41,600 million euros, 3.5% of GDP, far from the 17% of GDP in 2007. However, significant differences can be observed at the level of autonomous region: while the mortgages granted in Galicia and Castilla y León represent just 2% of GDP, the Balearic Islands triple this figure to 6%, followed by the Community of Madrid with 4.9%; Andalusia with 4.2% (but particularly Malaga with 8%), and Catalonia with 3.4% of GDP.

The number of new mortgage loans granted is growing but has yet to reach pre-crisis levels, with big differences between regions

The recovery in the mortgage market is stronger in some zones than others. The most active zones tend to have higher house prices and have also posted higher growth since the recovery in the real estate market. Consequently, they have worse housing affordability ratios (see the article «How affordable is housing in Spain: big data analytics», in this Report) and larger mortgage burdens; i.e. in these regions, the households taking out mortgage loans have to meet higher payments compared with their income than in the rest of the regions. At a national level, new mortgage loan payments represent 32.1% of gross disposable income (according to the Bank of Spain), albeit with marked differences between regions, with the Balearic Islands, Canary Islands, Catalonia and Madrid all being above the national average.

Mortgage payments by autonomous region in Q2 2018
(% of median wage*)



Mortgage burden (Q2 2018)

- > 27%**
- 27%-24.5%
- 24.5-22.5%
- < 22.5%

Notes: ** The median wage comes from the wage structure survey (available up to 2016) and the values of Q2 20l8 have been extrapolated from the wage costs (ETCL) ** Groups defined in quartiles.*
Source: *CaixaBank Research, based on data from the Spanish College of Registrars and National Statistics Institute.*

The financial burden, level of debt and mortgage interest rate are all important factors that affect the financial stability of households and therefore need to be monitored closely

In addition to the financial burden, other important aspects also need to be monitored to determine the risk to the financial stability of such households. They might tend to take on debt for longer periods in order to reduce the monthly payments or to finance a larger percentage of the property's value. However, at present these two phenomena do not seem to be significant. At a national level, mortgage contracts tend to last 23 years and no significant differences can be observed between autonomous regions. Regarding the loan-to-value ratio (LTV), this has remained at a comfortable level of 65%, without regional differences, and just 15% of new mortgage loans have been granted at an LTV rate above 80%.

The type of interest rate used for mortgages is another significant factor that could affect financial stability. In the past few years there has been considerable growth in the number of fixed rate mortgages, now accounting for 40% of new mortgage loans (compared with 3% in 2009) but with significant differences between regions: Catalonia (52%) and the Balearic Islands (49%) on the positive side while the Community of Madrid is far below the national level (29%). It should be noted that fixed interest rate mortgages do not pass on the risk of interest rate hikes to households. Given that the ECB is expected to normalise its accommodative monetary policy in the near future, which will lead to higher interest rates, such households would not see any increase in their mortgage payments that could jeopardise their financial stability.

In short, Spain is in a very different situation from the rest of its partners in the European Union, which are implementing countercyclical macroprudential measures. Household debt in Spain is currently at a comfortable level and the country is at a very early phase in its credit cycle. At a regional level, those regions where the real estate market has recovered sooner and where prices are growing the most tend to have greater mortgage burdens, although these are still far from the levels observed during the housing bubble. Consequently, the regulatory authorities are unlikely to implement any macroprudential measures in the near future.[3]

[3] This has been confirmed by the Bank of Spain's latest Financial Stability Review, which shows that none of the indicators monitored in order to activate macroprudential instruments has alert status.

Indicators and forecasts

Annual change (%), unless otherwise specified

	Average 2000-2007	Average 2008-2014	Average 2015-2017	Forecast 2018[1]	Forecast 2019	Trend[2]
Economic activity indicators						
Total GDP	3.8	-1.0	3.3	2.5	2.1	
GVA construction	2.7	-8.0	4.8	6.5	4.0	
Investment in construction	6.2	-8.6	3.1	6.2	3.5	
Residential investment	7.9	-9.1	5.0	7.1	4.0	
Investment in rest of construction	4.8	-7.6	1.4	4.9	3.0	
New building permits (thousands)	642	94	65	100	130	
New building permits	3.9	-30.5	32.5	23.8	30.0	
Certificates of final completion (thousands)	482	230	46	72	120	
Certificates of final completion	9.1	-30.3	5.9	35.6	66.7	
Synthetic indicator for construction	3.7	-8.3	6.5	-	-	
Confidence in the construction sector (level)	13.1	-41.8	-30.6	-	-	
Labour market						
Total workers registered with Social Security	3.5	-2.1	3.3	3.0	2.5	
Registered workers in construction	6.1	-12.8	4.5	6.7	4.5	
Construction of buildings	-	-16.4	6.8	9.0	5.0	
Civil engineering	-	-15.1	1.9	3.1	2.9	
Specialised construction	-	-10.9	6.3	5.7	4.5	
Registered workers in real estate activities	10.4	2.5	6.4	6.9	4.2	
Total employees (LFS)	4.3	-2.4	2.8	2.5	2.1	
Employees in construction (LFS)	7.0	-13.3	4.4	7.0	4.8	
Temporary employment rate in construction (%)	57.3	39.6	42.0	40.0	39.0	
Unemployment rate in construction (%)	7.5	22.8	14.2	10.3	8.8	
Demand for housing						
Sales[3] (thousands)	886	388	409	520	558	
Sales[3]	-0.1	-11.0	13.4	11.8	7.3	
New housing[3]	12.1	-13.3	-8.8	-	-	
Second-hand housing[3]	-7.8	-8.6	24.1	-	-	
Foreign sales[4]	-22.1	-0.2	13.4	7.9	3.2	
Second home sales[5]	-7.6	-9.4	7.4	4.1	4.0	
Prices						
House prices (Min. Public Works)	12.4	-4.7	1.8	3.5	4.5	
House prices (INE)	-	-5.9	4.8	6.3	5.7	
Land prices	20.6	-8.7	3.5	3.8	3.7	
CPI rent	3.2	1.8	0.4	-	-	
Affordability ratios						
House prices (% gross disposable income)	6.4	7.4	6.8	7.2	7.3	
Theoretical burden (% gross disposable income)	35.1	37.5	30.5	32.0	33.0	
Return on rent (%)	4.5	3.5	4.4	-	-	
Financing[6]						
Number of mortgages	6.1	-21.7	15.3	10.5	-	
Outstanding balance of credit to purchase housing	23.1	0.0	-3.7	-2.0	-	
New loans housing	-2.2	-18.5	13.6	14.7	-	
Outstanding balance of credit for property development	42.5	-7.1	-10.5	-14.0	-	
NPL ratio of the credit for housing (%)	0.5	3.5	4.9	4.4	-	
NPL ratio of credit for property development (%)	0.4	20.0	26.2	11.3	-	

Notes: *1. Forecasts at 30 November 2018. 2. A sun indicates growth above the 2015-2017 average less 1/4 standard deviation; a sun with a cloud indicates growth above the 2015-2017 average less a standard deviation; a cloud indicates negative growth or growth above the 2015-2017 average less 1.5 standard deviations; rain indicates growth below the 2015-2017 average less 1.5 standard deviations. 3. The 2000-2007 average for house sales corresponds to the period 2004-2007 and the data come from the Ministry of Public Works. National Statistics Institute's sales figures as from 2007. 4. Foreign sales according to the Ministry of Public Works. 5. Sales of second homes are estimated based on the sales carried out in a different province than the buyer's residence. 6. The financing data in the column «Forecast 2018» correspond to cumulative data up to the latest data available for 2018.*
Source: *CaixaBank Research, based on data from the National Statistics Institute, Ministry of Public Works, Ministry of Employment and Social Security and Bank of Spain.*

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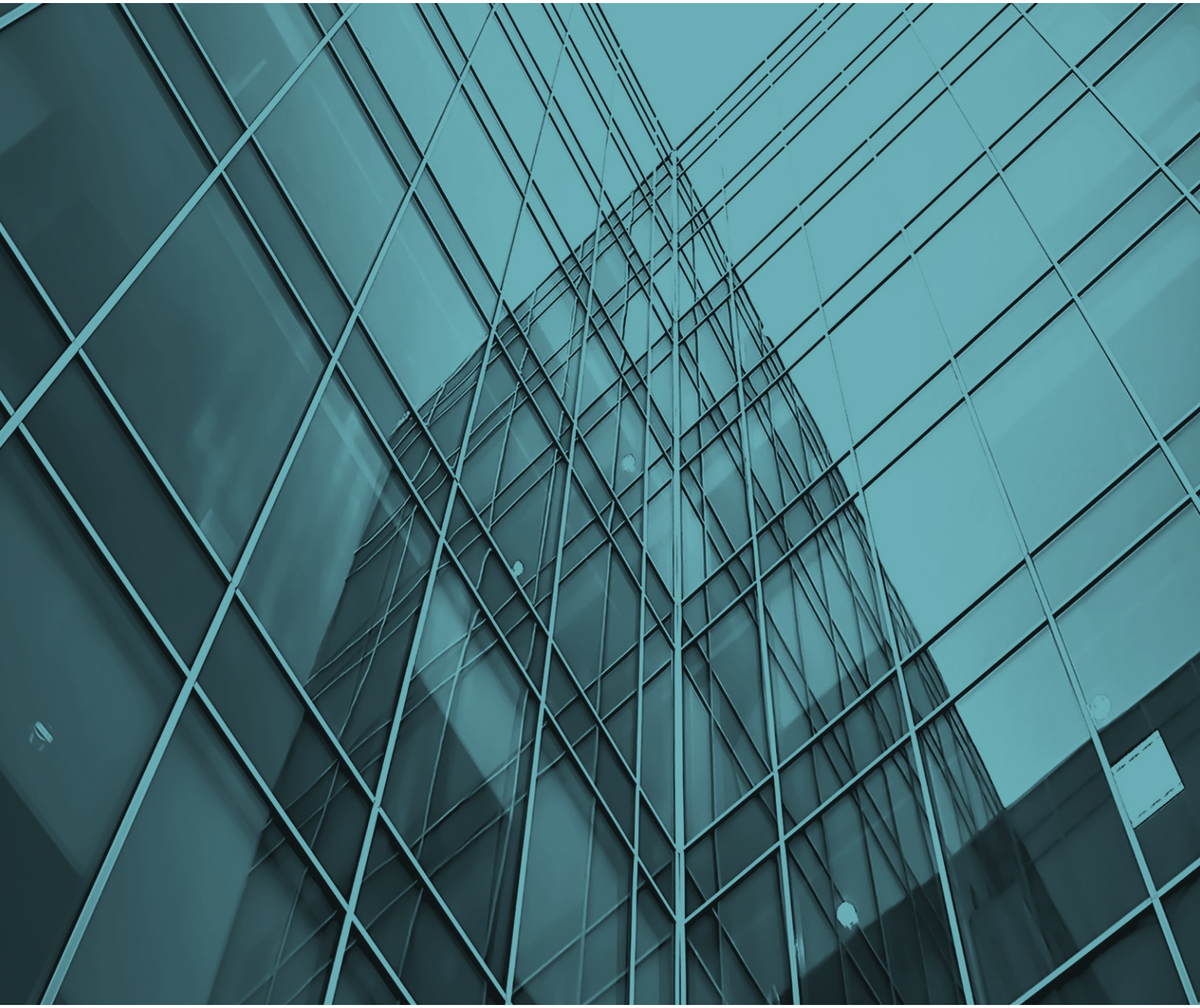

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