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Highlights in this issue:

- **Real housing prices have doubled during the last decade, together with a construction boom**
- **Mortgage repayments are perceived as a strong *housing price signal***
- **Rising interest rates seem to be the highest risk for economic activity**

The Spanish housing market: are we in for a soft landing?

*By Javier Yaniz Igal**

Summary

The number of new dwellings built in Spain more than doubled between 1997 and 2004. Provisional estimates indicate that the figure might currently be over 800,000. Strikingly, this impressive response of supply to demand has not put a brake on housing prices, which have also doubled in real terms during the same period. This country focus analyses developments in the Spanish housing market, based on the premise that the price of the property may not be the decisive factor in households' purchasing decisions, especially if the acquisition is to be financed with a mortgage. In that case, the annual mortgage payment measured in terms of the household income could provide a better market signal than housing prices. In fact, significant and persistent improvements in the financial conditions, coupled with a sustained increase of nominal income in Spain, have offset housing price increases, leading to a broadly constant, and sometimes even decreasing, annual financial effort between 1997 and 2004. As a result, rising housing prices have not had any significant impact on households' purchasing power, with the sustained increase in household income, coupled with a high population growth by historical standards, apparently behind the persistent demand shock in the Spanish housing market.

Housing market boom

Residential construction activity has boomed during the last decade…

In parallel with the current, long-lasting expansionary phase of the Spanish economy, the construction sector has grown at an annual average rate of 6% in real terms since 1997, which compares with an annual average real GDP growth rate of 3½%. As a result, while construction represented 11½% of Spain's GDP in 1997 (a level comparable with that of the euro area), this rose to 16% of GDP in 2004 (by which time it was only 10½% in the euro area). Interestingly, residential construction accounts for around ¾ of the total expansion recorded by the sector. In 1997, residential construction represented 4½% of GDP (6% in the euro area); eight years later, the share is 8% (5¼% in the euro area). Specifically, while around 250,000-300,000 new residences were initiated each year in the mid-nineties, more than 700,000 were started in 2004 (see chart 1), and projections for 2005 and 2006 suggest that the figure could be around 800,000 annually. This is more than the number of new residences initiated in Germany, France and the UK (or Italy) together.

Surprisingly, the increase recorded in the supply of new residences has not cooled down price pressures. Since 1997, housing prices have been increasing at an annual average rate of 12% in nominal terms. Housing-price inflation picked up to

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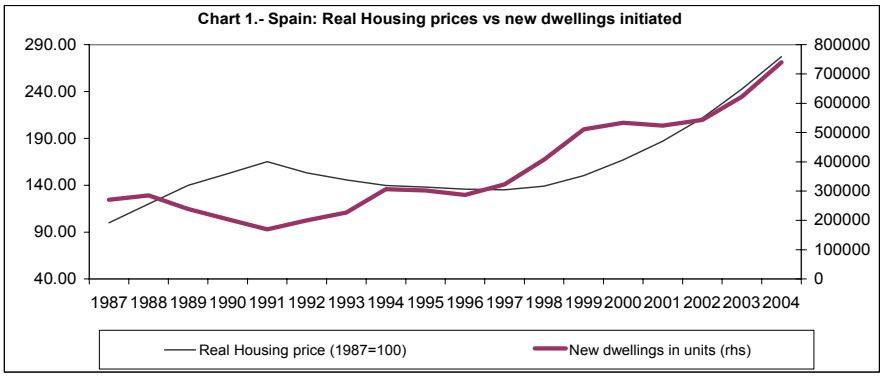
17½% in 2003, declining only marginally to slightly below 17% in 2005. Discounting HICP inflation (averaging 3% over the period), housing prices have doubled in real terms in only eight years.

….but this has not prevented prices from rising further!



Source: Banco de España, Ameco and own calculations

These outcomes of the Spanish housing markets are striking both in historical and in geographical terms (see chart 1 and table 1). For instance, during the previous expansionary phase recorded by the Spanish economy, between 1987 and 1991, nominal prices rose by an annual average of 15%, increasing by around 50% in real terms in only four years. This appears comparable with current price developments. However, the number of units built actually declined over the period. Moreover, although less sustained, the economic expansion in the late eighties was stronger than now. Between 1987 and 1991 GDP grew at an average of 4½%. Therefore, supply shortages and a higher GDP growth (higher disposable income) largely explained price increases.

This diverges not only from Spain's past experience, but also from recent developments in some other EU members

Housing market outcomes in Spain also stand out from those of other European countries that have also experienced a strong expansion of housing prices. Salt and McDonald (2004) and Albers and Langedijk (2004) provide detailed information about the effects of rising housing prices in the UK and the Netherlands respectively. In the United Kingdom between 1996 and 2002, and in the Netherlands between 1995 and 2000, prices also rocketed (by 13% annually in the UK and by 11% annually in the Netherlands). However, as in Spain in the mid-eighties/early nineties, the volume of the housing stock adjusted only very slowly or even declined. In the United Kingdom, at the peak of the price increase of 25% in 2002, the housing sector grew by a meagre 2% in real terms, so that the supply of new dwellings remained below 200,000 units over the year. This is less than one third of Spain's 'production' over the last few years, yet the UK population is roughly 50% bigger than Spain's. In the Netherlands, the substantial price increase actually went hand in hand with a contraction of the sector in real terms.

Table 1.- Comparison with previous expansion and with the UK and the Netherlands

	ES, 1997-2004	ES, 1987-1991	UK, 1996-2002	NE, 1995-2000
Nominal housing price	12.3	15.1	12.6	11.4
Dwellings built	12.0	-6.9	1.7	-5.0
Creation of new households	1.9	1.4	0.6	1.0
Nominal gross disposable income	6.0	11.1	5.0	4.8
Interest rates	5.1	16.3	5.9	3.6
Inflation (HICP)	2.8	5.9	1.4	2.0

(Data in annual % change)

Source: Banco de España, Ameco and own calculations

The Spanish housing market: prices and main factors behind the present demand shock

Reviewing the relevant contributions to the literature, Zhu and Tsatsaronis (2004) identify four main factors explaining price developments in housing markets, namely demography, disposable income, financial conditions and inflation. They conclude that inflation appears to be the most important factor driving housing prices. Focusing on the Spanish case, and also consistent with the mainstream of the literature, Malo de Molina (2004) adds tax incentives, which encourage real estate

It is argued that housing prices are driven by demography, income, financial conditions, inflation, supply and investment alternatives

acquisition instead of renting, the demand from non-residents and the significant role played by a relatively rigid supply of urban land as additional relevant factors. Within the same conceptual framework, Balmaseda *et al*. (2002) take account of developments in the Spanish stock market in the early 2000s, which appeared to offer very few highly profitable assets, compared with real estate and consequently, according to the authors, largely explains the persistence of the demand shock at the beginning of the 2000s.

The available econometric evidence is scarce and somewhat outdated, because it does not incorporate the most recent market developments. For instance, the model in Balmaseda *et al*. (2002) covers the period 1990-1999, while that in Martínez-Pagés and Maza (2003) is estimated over 1978-2002. As a consequence, the data either does not include the most important part of the current housing boom (the 2000s), or it only partially includes it, burying it in a period that is both too long and probably non-comparable in structural terms. Furthermore, both econometric models anticipate a return to the equilibrium in the respective forecasting periods (2000-2002 in Balmaseda, San Martín and Sebastián (2002), and 2003-2007 in Martínez-Pagés and Maza, (2003)), while the reality remains stubbornly contradictory.

A stylised analysis of the recent developments observed in these fundamental factors suggests that the current outcomes of the Spanish housing market seem to response to demography and financial conditions more than to anything else. Although it can probably explain the existing lags between the demand shock and the adjustment of supply, a relatively ***rigid availability of urban land*** has not prevented the number of new residences built every year from almost trebling between 1997 and 2005. Even if it is true that after the ***stock market*** bubble burst in 2001, there were few alternative investments in Spain, in 2004 and 2005 the markets recovered with no effect on the demand for housing. Anecdotal evidence indicates that the acquisition of real estate by ***non-residents*** has remained quite stable at around 100,000 units per year in the 2000s. ***Inflation*** has also remained fairly stable at around 3% during the last decade, and therefore clearly uncorrelated with changes in housing prices.

Demography and financial conditions are crucial in explaining the excess of demand in the Spanish housing market

In contrast, partly due to high migration inflows, household creation (***demography***) has been more sustained during the last decade (2% per year) than either in the previous expansionary period (1½%) or in the UK (½%) or the Netherlands (1%). ***Mortgage interest rates*** fell from around 10% in the mid-nineties to around 3% in 2004. Therefore, real mortgage interest rates are close to zero or even negative. This fall in interest rates has combined with sustained ***disposable income*** growth of 3% in real terms. Finally, García-Vaquero and Martínez-Pagés, (2005) show that ***tax incentives*** to housing acquisition increased after the 1999 reform of the personal income tax by around 8 percentage points in effective terms, which would have partially offset the effect price increases.

Households' access to real estate acquisition is another key element of the housing market

Although these factors no doubt explain the increasing demand for dwellings in Spain, the question remains whether they are enough to explain the size and persistence of the current demand push. After all, developments in the fundamental factors do not always appear fully in line with the growth observed in the housing market. Gross disposable income, for instance, is not growing at very high rates by historical standards (5% over 1987-1991). Similarly, interest rates actually stopped falling in 2003 and their declining trend of the recent past is reversing. Finally, while new households are growing at higher levels than in the past, a difference of just ½% per year compared with the period 1987-1991 is not enough to explain a sustained demand of more than 700,000 new residences per year. Martinez-Pagés (2005) considers that *ceteris paribus* the accessibility or "capacity to access" the housing market is an important additional factor explaining the demand for housing. The concept of housing accessibility refers to the capacity of households to acquire real estate with their disposable income and prevailing financial conditions. Martinez-Pagés compares the annual repayment of the mortgage contract during the first year with the annual household income, the resulting ratio being the accessibility indicator. Underlying this concept of accessibility is the idea that absolute housing prices may not be the determining factor in a buyer's decision to purchase a given property. Households would rather look at the proportion of their annual income needed to cover the mortgage interest and principal. This annual financial effort is directly proportional to the price of the property and the nominal mortgage interest, but inversely proportional to the household income.

San Martín et al. (2005) calculate an accessibility indicator, which compares the annual repayment in terms of the household income, thus similar to the one calculated by Martinez-Pagés, with the 33% threshold of disposable income, which is considered the maximum that a family should devote per year to repaying a mortgage. The next section analyses developments in accessibility and reports preliminary econometric evidence on the relationship between accessibility and the number of new residences built every year.

The annual financial effort

Following Martinez-Pagés (2005), an accessibility indicator has been calculated for the 1987-2004 period, which measures the proportion of the household nominal gross disposable income (*GDI*) devoted to repayments in the first year of the loan (*AP*). AP is a function of the housing price (*P*) multiplied by a function of the nominal interest rate (*r*) and the duration of the loan in years (*n*):

(1) $AP = (P \times r)/(1 - (1+r)^{-n})$

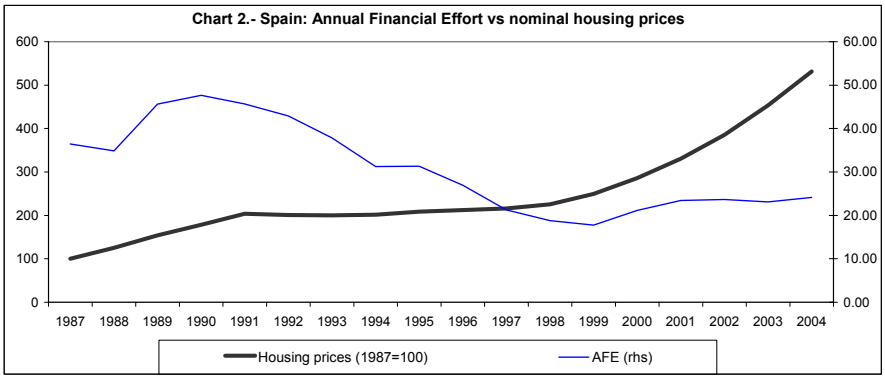
Interest rates and housing prices have been the main contributors to changes in the AFE since 1997

while GDI is calculated according to the well-known expression,

(2) $GDI = wL + CI + TR - PIT - SSC$

where *w* is the annual nominal wage; *L* is the level of employment; *CI* is capital income; *TR* are transfers to households; *PIT* are personal income taxes and *SSC* denote social security contributions. The accessibility capacity indicator is the ratio of *AP* to *GDI* and will be referred to hereafter as the annual financial effort (AFE).

Chart 2.- Spain: Annual Financial Effort vs nominal housing prices



Source: Banco de España & own calculations

Housing prices and accessibility followed broadly similar trends until the mid-nineties

Over the last two decades, developments in the AFE have told the story of the Spanish housing market outcomes (Chart 2). Overall, periods of relative price stability, such as the first half of the nineties, have been broadly coincidental with reductions in the AFE, while it rose over periods of rising housing prices, such as the late eighties/early nineties. This contrasts with the most recent period, 1997-2004, when high price increases have been offset by higher income and better financial conditions, so that the annual financial effort has remained constant or even decreased. Thus, the increase in the AFE between 1987 and 1991 (from around 40% to more than 45%) was accompanied by a contraction of the number of new residences built (from around 250,000 in 1987 to less than 175,000 in 1991). Similarly, over the period 1992-1996, when housing prices actually fell in real terms, the financial effort also fell, to below 30% in the mid-nineties. During this period, the number of houses rose from just below 200,000 in 1992 to almost 300,000 in 1996, when the current demand shock started.

Between 1997 and 2004, the AFE stabilised around 25%, in contrast with annual average nominal housing price increases of 12%. Table 2 presents the contributions of the components of the AFE to the changes in the financial effort since 1996, explaining why the AFE and housing prices have not gone in the same direction. Until 1999, the most important contribution to the financial effort came from the sustained reduction in interest rates, which detracted more than 10 percentage

points and was behind the historical minimum of 18% reached by the financial effort in 1999.

Table 2.- Direct contributions* to change in financial effort for house purchase**

	Financial conditions		Household income	Housing market	TOTAL
	Interest rates	Loan duration	Disposible income	Housing real price	
1995	-	-	-	-	
1996	-2.9	-1.1	-0.9	0.6	-4.3
1997	-3.9	-1.2	-0.9	0.4	-5.6
1998	-1.9	-0.8	-0.7	1.0	-2.4
1999	-1.7	-0.5	-0.7	2.0	-0.8
2000	1.7	0.0	-0.9	2.6	3.4
2001	0.4	-0.5	-0.8	3.3	2.4
2002	-1.7	-0.5	-1.0	3.9	0.7
2003	-2.7	-0.5	-0.9	4.1	0.1
2004	-1.0	-0.6	-1.0	4.0	1.4
Total	-13.6	-5.7	-7.8	21.9	-5.2

*Measured by percentage points change of financial effort referred to gross disposable household income

** Negative figures represent a reduction of financial effort

Source: Banco de España & Commission services

Between 2000 and 2004, the AFE rose slightly above 6pp. Higher prices became the dominant factor contributing to an 18 percentage point rise in the AFE, which was partially offset by further interest rate reductions, contributing by 3 ½ percentage points, together with longer repayment periods (2pp) and increases in household income (5pp).

Box.- Preliminary econometric evidence

The table below summarises the results of the best econometric models explaining the annual change in the new residences over the period 1987-2004 in function of the changes in demography (creation of new households), the changes in interest rates and, alternatively, the changes in housing prices and the changes in the annual financial effort (the intercept has been omitted for simplicity). Both models present a lag structure reflecting the lags between changes in the demand determinants, changes in the demand itself, and changes in the supply of new dwellings (details available upon request). Interestingly, the model including the changes in housing prices has a much lower explanatory power and, according to the DW, seems to be a worse specification in econometric terms than that including the AFE. .

Summary of preliminary econometric evidence

Demography	Interest rates	Housing prices	AFE	R^2	Durbin-Watson
12.59 (1.91)	-2.02 (-0.95)	-1.15 (-2.33)		0.55	2.82
9.52 (2.27)	-3.99 (-3.33)		-2.04 (-5.08)	0.81	1.91

The t-statistic is presented in brackets

Looking forward: risks to economic activity

In view of the weight of the residential construction sector in the Spanish economy and in its growth composition, it seems worth analysing the main factors that could put pressure on the annual financial effort. An increase in the AFE would cool down demand for housing and, with a certain lag, would significantly reduce the number of new residences, which might in turn lead to a slowdown in activity and employment in Spain. Table 3 presents the effects of a rising interest rate scenario, a reversal in the financial conditions – which could again shorten mortgage repayment periods, and the impact of further housing price increases on the AFE.

Ceteris paribus, the impact of an interest rate increase of 1 pp in one year would lead to an increase in the AFE of around 3 pp. A reduction of one year in the duration of the mortgage results in an increase of more than ½ pp in the AFE. Furthermore, a price increase of 10% represents around 2½ additional percentage points in the AFE. Given that monetary conditions in the euro area are being tightened, while housing prices in Spain are still increasing at a double-digit rate,

further increases in the mortgage interest rate might push the AFE close to 33%, thus significantly restraining demand and activity in the market.

Changes in the financial conditions might have a significant impact in economic activity in the medium term

Table 3.- AFE increase with rising interest rates, declining loan duration and rising housing prices (2004=100)

Interest rate	AFE	Loan duration	AFE	Housing prices	AFE
3.29	23.93	25	23.93	100	23.93
3.5	24.46	24	24.58	105	25.13
3.75	25.10	23	25.29	110	26.32
4	25.75	22	26.06	115	27.52
5	28.42	21	26.91	120	28.71
6	31.19	20	27.86	125	29.91
7	34.07	19	28.90	130	31.11
8	37.03	18	30.06	135	32.30
9	40.07	17	31.37	140	33.50
10	43.18	16	32.84	145	34.70

Source: own calculations

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