

# Bubbles in real estate?

## A Longer-Term Comparative Analysis of Housing Prices in Europe and the US

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### Abstract

The downturn in the US housing market has attracted a lot of attention as it has sparked a global financial crisis. It is generally assumed that the eurozone does not face a similar problem. This paper shows that this assumption is wrong.

- 1) The euro area average index of real housing prices has risen almost as much as that of the US and is now (as that of the US) about 40% above its 30-year average. This is similar to the overvaluation of Japanese real estate at the height of the Japanese bubble, which was then followed by over a decade of continuous decline.
- 2) Over the last 30 years, the euro area index for real housing prices has tended to follow that of the US quite closely. The lag is now much shorter than in the 1970s or 1980s. The euro area market is thus likely to turn soon as well.

One feature of housing price cycles that tends to be forgotten is their extraordinary length: many last for more than ten years. This persistence means that the downswing, which now seems to have started, is likely to last at least until the next decade.

Within the euro area, there are large divergences: cases of 'froth' (Spain, for example) co-exist alongside cases of declining prices (Germany). These divergences have persisted for over a decade and have led to important macroeconomic disequilibria.

The paper also develops an indicator of 'housing overhang', which shows by how much demand for new construction has to decline to bring the supply of housing back to normal levels. This indicator suggests that there is virtually no housing overhang in the eurozone on average and that it is of a manageable magnitude in the US. Spain and Ireland, however, face a massive housing overhang and thus probably a sharp deceleration of construction demand.

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# **BUBBLES IN REAL ESTATE?**

## **A LONGER-TERM COMPARATIVE ANALYSIS OF HOUSING PRICES IN EUROPE AND THE US**

**DANIEL GROS\***

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### **1. Introduction**

Until recently global financial markets were experiencing a period of high liquidity growth and increasing asset prices.<sup>1</sup> It has been widely observed that one important asset class, namely housing, has been a key to understand macroeconomic developments, especially in the US.

It is now clear, however, that the boom in the US housing market has ended and it has become ever more likely that construction activity (and consumption demand) in the US will slow considerably along with the deceleration of housing prices. Euro area financial markets (as others worldwide) have already been strongly affected by developments in the US. But it is generally assumed that the eurozone does not face a similar prospect of slowing consumption demand due to lower housing prices, given that areas of 'froth' (Spain, for example) co-exist alongside areas of declining prices (Germany). The widely held assumption that housing prices in the euro area have on average behaved differently from those in the US, however, is actually not warranted. In fact the euro-area housing market experienced a boom phase similar to that in the US until 2006, and the resulting price level represents an overvaluation that is not too dissimilar from the one observed in the US.

This paper is organised as follows: the next section presents a composite indicator for housing prices in the euro area that is issued more frequently than the one published by the European Central Bank (ECB). Section 3 then provides a simple long-term comparison between the US and the euro area indicators. Section 4 then discusses briefly the macroeconomic consequences of a sustained boom (and bust) in housing prices. Section 5 then speculates about the possible timing of the expected turning point in euro area housing markets. Section 6 concludes.

### **2. The data**

The first step in discussing the euro area real estate market is to construct an aggregate index for the entire area, ideally in inflation-adjusted terms. In principle, the European Central Bank provides an indicator for housing costs, but it has been available only since 1982 and only in nominal terms, whereas one should look at housing prices in real terms. Moreover, data provided by the ECB are mostly annual (a shorter series is also available semi-annually), and a comparable indicator is not provided for the US, which is crucial for any comparison.

This paper is therefore based on OECD data, which have the advantage of dating back to 1970, being issued quarterly and also covering the US. The drawback of the OECD data is that it does not cover 100% of the eurozone. Hence, a first preliminary data check was performed to see

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\* Daniel Gros is Director of the Centre for European Policy Studies. He expresses many thanks to Thomas Mayer and Angel Ubide for valuable comments and to Chiara Faini for research assistance.

<sup>1</sup> This paper avoids the controversial question whether central banks somehow fuelled the asset price boom by keeping interest rates too low and tolerating an excessive build-up of liquidity. On the link between liquidity (or rather money) and housing prices, see Greiber & Setzer (2007).

whether using the OECD data might lead to a bias. But this does not seem to be the case, as we demonstrate below.

In a first step, the ECB housing price index was deflated by an index for euro consumer prices to create an index of real housing prices for the euro area (from 1982 to 2004). Since the historical series of the ECB housing index is only annual, it was also necessary to extract an annual series from the quarterly index of real housing prices provided by the OECD. The OECD indicator is based on data from national *real* housing price indices for the seven largest euro area member countries accounting for about 90% of its GDP. Only for the five smallest are data not available for the 30-year period considered here.<sup>2</sup> The weights used to construct the euro area index were the shares of the countries concerned in the GDP of this group, because this should reflect the potential impact of housing prices on domestic demand.

Figure 1 below compares the euro area real housing price index published by the ECB and the one constructed on the basis of OECD data. It is apparent that the movements of the two series are closely aligned. In fact, they are almost identical for the last few years, but the ECB indicator tends to show a somewhat larger increase over the longer run.

Figure 1. A comparison of OECD and ECB real housing price indicators

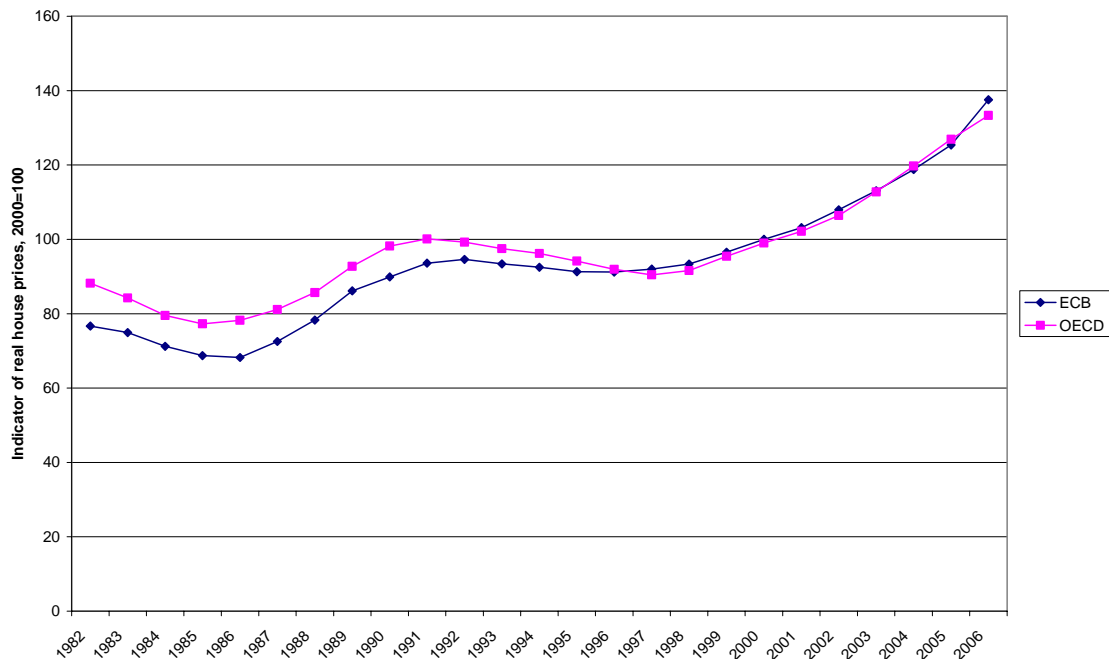


Table 1 below shows the summary statistics for the two series. The overall increase in real housing prices was actually 8 percentage points higher if measured by the ECB data than by the OECD-based data. A comparison of the end-2004 value of the index to its longer-run average yields a similar conclusion: The ECB data would indicate a greater overvaluation than the OECD data.

<sup>2</sup> Real estate market developments have always been heavily influenced by regional supply and demand conditions and price bubbles have tended to be concentrated in certain regions. This is as true for the US as for Europe. The depressed state of real estate in Germany is not too dissimilar from that of the midwestern states of the US. Hence, it is as useful to look at the euro area average as it is to look at the US average.

Table 1. A comparison of ECB and OECD-based data

	ECB data	OECD data
Ratio 2004/1982	154.9	135.8
Average 1982-2004	93.2	96.9
2004 value/average	147.5	137.6

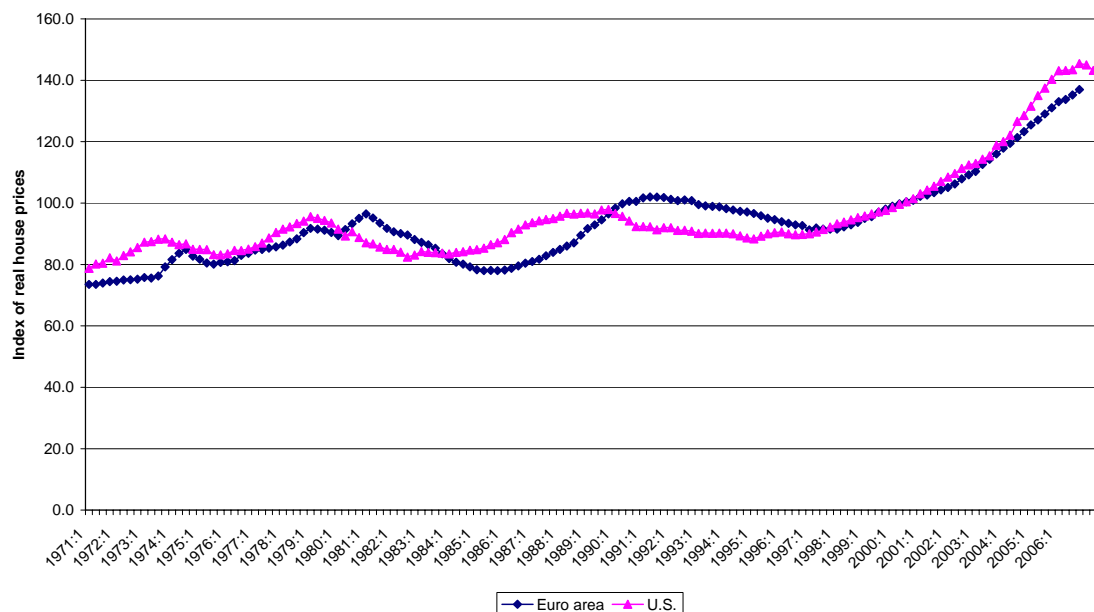
Source: Own calculations based on ECB and OECD data.

This preliminary comparison of the ECB and the OECD-based data suggests immediately that the OECD data used in the remainder of this paper are likely to somewhat understate the increase in housing prices. Hence the conclusions would if anything be even stronger if ECB data had been used.

### 3. A simple message from the data

As stressed in the introduction, one way to judge euro area housing markets is by comparing them with the US. A straightforward plotting of the data immediately sends a strong message in this respect. Figure 2 shows the euro area index constructed from OECD data together with that of the US.

Figure 2. Real housing prices in a long-term perspective: A comparison of the euro area (GDP weighted) and the US



The simple fact illustrated in Figure 1, namely that the euro area has over the last several years experienced a similar development as has occurred in the US, is not widely enough appreciated. The ECB has drawn some comfort in recent year from the contained level of housing price inflation in the euro area average over the last few years. However, what seems worrisome is not so much the increase during any particular year, but the cumulative increase over the last decade and the acceleration over the last years, which has brought the index to beat all previous records, as can easily be verified in Figure 2.

Could the peak attained by European and US house prices be justified by the existence of a secular trend? This is unlikely since housing is a reproducible asset – new houses can be produced at essentially constant marginal cost without any clear limit (see Shiller, 2005) – and its relative price should increase over time only if productivity gains in building houses are much lower than those in other areas of the economy. It is not necessary to discuss here whether or not this is the case, since a simple reading of the data until about 2000 shows that (real) housing prices increased by about 25% between 1971 and 2000, or less than 1% per annum during the previous quarter of a century. Moreover, housing prices had a tendency to revert to this trend while following long cycles (see also Table 2 below).

There is no reason to expect from recent developments a break in the historical tendency of housing prices to revert to their longer-run, slowly increasing trend. The marginal cost of producing new housing has not changed much recently (or in the longer run). The supply of land is of course limited, but this is not yet a real constraint on housing, especially in the US.<sup>3</sup> In Japan, land scarcity might justify a higher level of prices, but as the last 15 years have shown, this has no implication for the evolution over time (over the last 15 years, prices have declined continuously although land has not become more abundant and the population has increased slightly). For a different point of view, see OECD (2005), which analyses national housing markets separately and finds strong evidence for overvaluation in only a few cases (namely, the UK, Ireland and Spain). However, since then prices have risen by more than 10%, making it more likely that other markets have become overvalued as well.<sup>4</sup>

In reality, housing price indices measure a mixture of reproducible assets (structures) and land. Moreover, most indices that measure the transaction prices of houses actually bought and sold do not make allowances for improvements in quality (or even quantity, such as surface area, etc.). Hence it might be the case that some secular increase in housing prices as measured by the indices used here could be justified by an increasing average size (of houses or even per room) or an increasing quality standard (insulation, quality of finishing, etc.). However, it is unlikely that these factors change greatly over the space of a few years. Moreover, these factors do not seem to have been an obstacle to the decline observed in Japan.

In the US, a housing price index was carefully constructed by the economists Case and Shiller to avoid the measurement problems arising from quality improvements and other issues. This widely watched index, which is published by Standard and Poors, uses only data from ‘repeat sales’, i.e. houses that are being resold without substantial changes or remodelling in the meantime. Sales of new houses thus do not enter this index. In principle one would expect the Case-Shiller index to increase less than the OECD data used here, which is based on surveys that include a large proportion of new homes. However, this has not been the case over the last cycle as Figure 3 below shows. For ten years, namely between 1996 and 2006, the Case-Shiller index has consistently increased by more than the OECD indicator. However, the downturn in the Case-Shiller index has also been stronger in the sense that the fall in housing prices apparent since mid-2007 has been much stronger if measured by the Case-Shiller index. Inspection of the data for the last major US recession (1991) shows that a similar pattern prevailed then. It thus appears that the Case-Shiller index has a systematically higher variability than the OECD data.

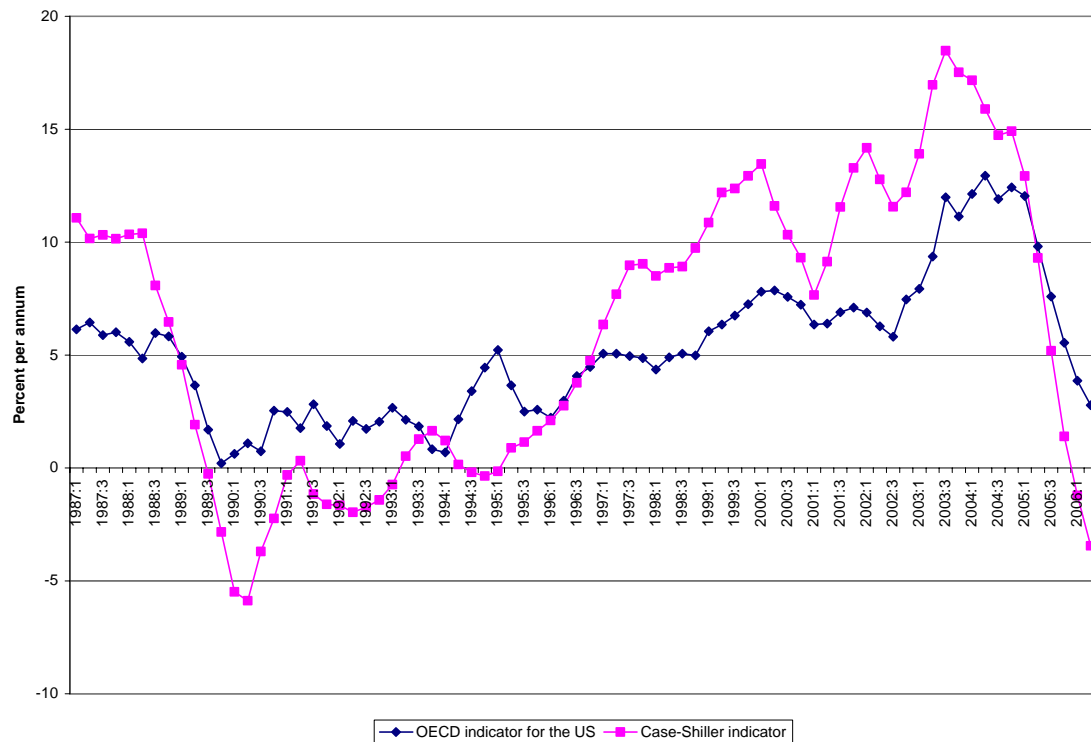
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<sup>3</sup> For more arguments along these lines, see Shiller (2005).

<sup>4</sup> See also Girouard et al. (2006).



Figure 3. Measuring housing price inflation in the US



Unfortunately an index of this type is not available in Europe. Given also the higher volatility of the Case-Shiller index for the US, this paper will concentrate on OECD data which are the only ones available for Europe and are more comparable across the Atlantic.

*Box 1. Why are housing prices so sluggish and predictable?*

A house (or an office building) represents a storable long-term asset. In principle, prices of longer-term assets should not be predictable. The reason for this is quite simple: anyone owning such an asset would sell it immediately if s/he could be certain that the price were to fall in the near future. This implies that an expected fall in price would lead to immediate massive sales so that the price would fall immediately to the expected future level. The same should apply to expected price increases. No investor would be willing to sell the asset today if he could be certain that its price were to increase in the near future (by more than the carrying cost).

In accordance with these considerations, it is thus not surprising that most markets' longer-term assets follow an unpredictable pattern called a 'random walk'. This is not the case for real estate as documented here because each house, each piece of real estate, is a different case and at least slightly different from even the adjacent plot. Moreover, all real estate transactions involve high costs. On most exchanges the transactions costs incurred in buying and selling shares, for example, are a fraction of one percent, whereas in most countries the costs arising from a real estate transaction are much higher – in many cases, by a factor of 100, as they can go up to 20% of the sale price, which would be 100 times more than the 20 basis points on a modern exchange. Table 2 shows estimates of the typical overall transaction costs in major OECD countries. The principal components are legal and agents' fees, plus transaction taxes, which vary greatly across countries. The costs refer to a round-trip transaction, i.e. they show by how much the price would have to fall (or increase) in a short period of time to induce an investor to sell and then buy again (or vice versa). It is apparent that in continental Europe transaction costs are much higher than in Anglo-Saxon countries. One key reason is that real estate transactions in continental Europe are in general subject to VAT, whereas they are not in Anglo-Saxon countries.

Table 2. Round-trip transaction costs (in percent) in major OECD countries

Anglo-Saxon countries		Continental Europe	
		Spain	12.2
US	9.1	Italy	17.0
UK	5.0	France	16.3
Australia	6.0	Germany	11.5

Source: Global Property Guide (see [http://www.globalpropertyguide.com/articleread.php?article\\_id=95&cid](http://www.globalpropertyguide.com/articleread.php?article_id=95&cid)).

A simple way to avoid the potential measurement problems arising from quality improvements and other factors (population growth, etc.) is to look at the ratio of prices to rents. If houses on average become bigger and better appointed over time, this should be reflected in higher rents. The same applies to the arguments sometimes used to rationalise higher prices in Spain and the US, for example population growth. Higher demand for housing from immigration should be reflected both in rents and in housing prices.

The longer-term series for the price/rent ratio plotted in Figure 4 below reveals that indeed this ratio has shown no trend for the US or the euro area until about 2000-01 (the value is almost exactly equal to 1 in both 1970 and 2000). It is only after that point that the two series take off. To illustrate the extraordinary nature of the level reached by both series, one can make a simple calculation: The standard deviation of these two series between 1970 and 2000 (30 years) was very similar at 6.1 and 7%. The level reached in 2006 (1.4 and 1.35) was thus equivalent to a deviation from the long term average of 6-7 times the standard deviation. In a normal statistical distribution, such an event should occur less than once in a millennium. The only other large country example with a similar value can be found in Japan, where the price/rent ratio reached a similar value at the height of the bubble. In Japan this peak was followed by 16 years of uninterrupted decline.

Figure 4. The price/rental ratio in a long-term perspective: A comparison of the US and the euro area (national data GDP weighted).

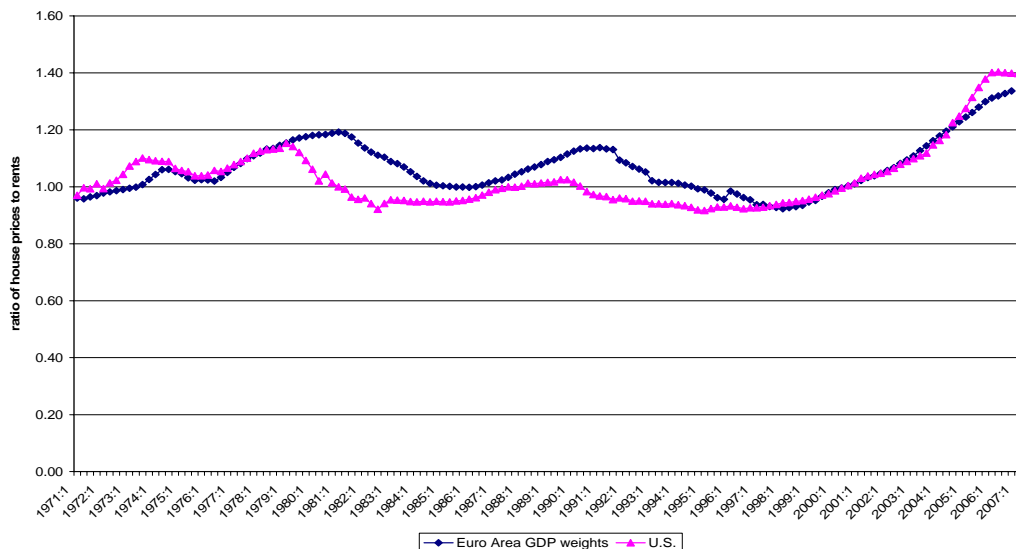


Table 3 below shows the averages by decade for price-to-rent ratios in the US, Japan, the eurozone and the OECD average. It is apparent that for all the major areas considered – the US, the eurozone and the OECD average – the average value for all three decades up to 1999 was close to 1. The only exception is Japan, where the price/rent ration went up to 1.2 only to fall back down to below its long-term average, as is shown in the last column below. The numbers for the overall OECD average show clearly that the first years of this century have been the exception: until 1999 the price/rent ratio was never more than 2 percentage points from its long-term average, but it has now (end 2006) risen to 1.22. The overvaluation is most pronounced in the US, however, standing at 36% and the EU at 24% above the longer-term average.

*Table 3. Housing price-to-rent ratios by decade (average levels in real terms)*

	Average 1970-1980	Average 1981-1990	Average 1991-1998	Average 1999-2006	End 2006/30-year average
US	1.06	0.98	0.94	1.14	1.36
Japan	1.02	1.20	1.22	0.89	0.69
Eurozone	1.06	1.07	1.00	1.13	1.24
OECD average	1.01	1.02	0.99	1.09	1.22

*Source:* Own calculations based on OECD data. Eurozone and global average are based on GDP weights.

#### **4. The economic impact of housing prices in Europe**

The key reason why US housing prices have attracted so much attention is the ample evidence suggesting that the increase in house prices in the US until recently provided strong support for consumption. The ongoing weakening of the US housing market is thus likely to weaken private consumption through the wealth effect. But household construction activity is also slowing down dramatically. Although this sector represents only around 5-7% of overall demand (consumption is about 10 times larger at around 70% of GDP), it can have an impact on overall demand.

Lower house prices should thus have a negative impact on domestic demand in the US, even apart from any impact that might come from stress in financial markets and the general increase in uncertainty about the economic outlook.

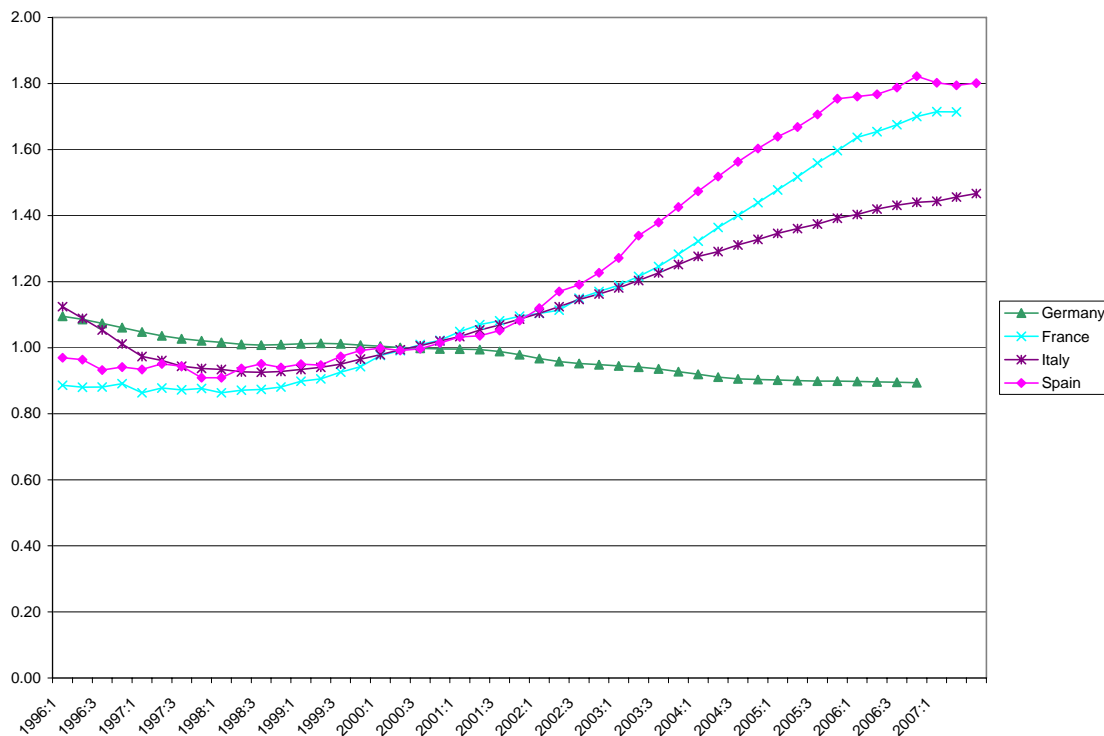
But would lower housing prices lead to similar consequences in Europe? One reason to doubt this is the simple fact that consumption growth in the euro area has so far been weak (or at least much weaker than in the US) in spite of the rapid increase in housing prices that has materialised on this side of the Atlantic as well.

In the euro area, the wealth effect might be less strong and consumers might be less indebted, but a fall in housing prices could instead also lead to an abrupt fall in new construction investment. Moreover, a fall in housing prices may jeopardise a part of the outstanding loans of the banking sector and force banks to raise reserves. This could reduce their willingness to extend credit to businesses and consumers. While the exact details of the transmission mechanism are different on the two sides of the Atlantic, it is clear that both sides face a similar risk. The remainder of this section discusses briefly the two main channels of transmission of housing prices to domestic demand: the wealth effect and demand for building new homes.

Before going into a detailed discussion about the economic impact of large movements in housing prices in Europe (and in particular the eurozone), it is important to document one key fact, namely the extraordinary divergence that has taken place within the eurozone. Prices have declined in Germany (and some of its smaller neighbours), whereas they have increased

considerably almost everywhere. As it is often argued that this divergence might be due to the fact that Spain has experienced a massive influx of immigrants whereas Germany's population is declining, it might be useful to concentrate immediately on the price to rent ratio, which, as argued above, should be invariant to short-term changes in housing demand. Figure 5 below shows the evolution of this indicator of housing prices for the major European economies.

Figure 5. Price/rent ratio in large EU countries



The relative movements that one can observe over the decade are extreme. Taking 2000 as a reference point, which is probably not far from equilibrium, one notes that in the intervening seven years housing prices in Spain have doubled relative to those of Germany according to this indicator (Spain went from 100 to 180, whereas Germany declined from 100 to 90).

It was noted above the increase in the composite euro area housing price indicator was about as large as that for the US. Since Germany constitutes an important part of the euro area, this implies that the increase in housing prices in the euro area outside Germany (essentially Italy, France and Spain) must have been even larger than in the US.

It is difficult to find a coherent explanation of the observed intra-euro area divergence. It is often argued that the boom in Spain was due to the decline in real interest that came with EMU. However, real interest rates in Italy also declined (by even more), but in Italy house prices increased by less than in Spain. Moreover, the increase in house prices was stronger in France than in Italy although EMU did not bring about a strong fall in real interest rates in France (at least not relative to Germany).

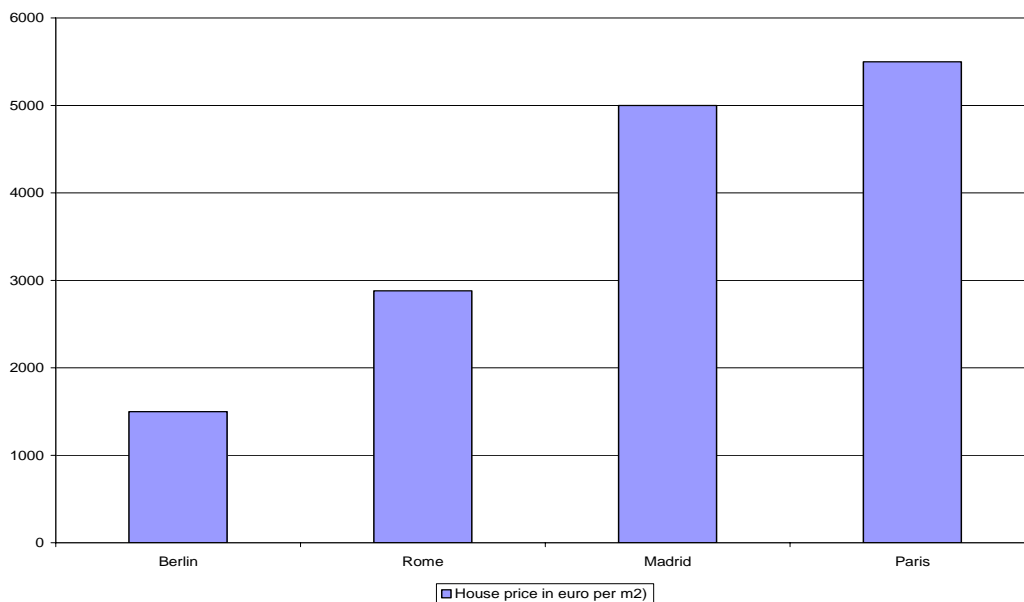
The most likely explanation of the divergence within the euro area is that it constitutes the aftermath of the construction boom created by massive subsidies in Germany, as the government tried to channel funds into the reconstruction of the former GDR. This construction boom led to overbuilding and when it ended, a massive housing overhang depressed demand for new houses for the next decade. The rest of what is now in the euro area provides a mirror

image to Germany because initially (i.e. during the early 1990s) it experienced a negative shock as the Bundesbank increased interest rates and the ensuing financial market turbulences forced a considerable increase in interest rates (real and nominal) elsewhere in Europe. Thus housing prices tended to be depressed outside Germany until the end of the German boom (i.e. around 1995).

*Box 2. Absolute price level versus price indices*

The analysis in this paper, as most academic contributions on housing prices, has concentrated on comparing the evolution of broad price indices across countries and over time. The evidence of overvaluation is usually based for each country on a comparison over time and an estimated 'normal' level. It is also possible, however, to make some rough comparisons of absolute price levels, for example of prices per square meter. These comparisons cannot be precise because any factors that determine the price of a particular piece of real estate or building will vary across countries. Quality standards, the mix of central and peripheral locations, the transport infrastructure, to name just a few, vary systematically across countries. However, if one limits the sample to countries with a roughly similar income per capita and economic structure (sharing the same currency), it should be possible to make a meaningful comparison. Balazs & Dubravko (2007) provide evidence that the divergence in the price indices documented here have also led to differences in absolute price levels that do not seem to be sustainable in the long run. Figure 6 below shows the price per square meter for an average house in the capitals of the four large continental European countries. It is apparent that it is difficult to see why the price level in the French or Spanish capital should be more than three times higher than in the capital of Germany. These observations provide another piece of evidence for the thesis that the current structure of real estate prices in Europe does not seem to correspond to a long-term equilibrium.\*

*Figure 6. Housing prices in four large European capitals*



Source: Balazs & Dubravko (2007).

\* It is evident that arbitrage is not possible in the case of house prices and since cross-border mobility in Europe is very limited, there is no direct mechanism that could equalise house prices across countries. However, it appears unlikely in the long run that such similar economies should contain such large differences of such an important category of asset.

The prolonged period of lower interest rates that started with the preparation of EMU, its realisation in 1999 and then the early years of this century provided a long period of a favourable background for housing prices. This was not an isolated European phenomenon since housing prices boomed almost everywhere in the world. The only exceptions were Germany and Japan, both victims of earlier overbuilding booms. What remains difficult to explain, however, is why the global environment of abundant liquidity and low interest rates, which apparently had such a strong impact almost everywhere, did not at least stop the ongoing decline in Germany and Japan.

#### 4.1 A wealth effect? House prices and consumption

It is usually assumed that housing prices have an important impact on consumption in the US. Should this also be the case in Europe? Two important characteristics of the housing market are actually quite similar on both sides of the Atlantic: home ownership rates are similar – 64% in the euro area and 68% in the US – and, as a rule of thumb, families invest often 6-7 times their annual income in housing the both the eurozone and the US. This implies that a movement of housing prices of 10% can have a very strong impact on actual or perceived wealth both in the US and in Europe. For the cash-constrained part of the population, a fall in housing prices, of say, 10%, could thus be equivalent to a loss of more than one-half of one's annual income, with a correspondingly strong impact on consumption demand.

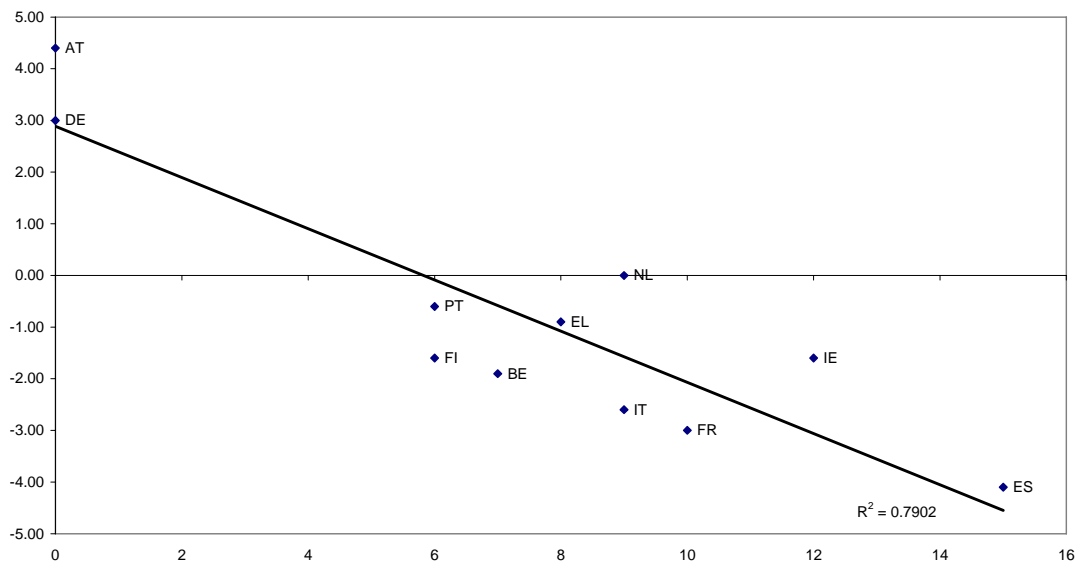
The key difference lies in the potential for extracting one's equity investment in housing, which is much lower in most euro area countries than in the US. This difference is partially due to differences in the transaction costs associated with mortgage loans (and their re-negotiation), but also due to the different levels of indebtedness of euro area consumers. In the euro area, mortgage loans amount to around 30% of GDP, compared to over 60% of GDP for the US.<sup>5</sup> For more details on estimated housing wealth effects in several countries, see Catte et al. (2006).

It is next to impossible to estimate *ex ante* the macroeconomic impact of a housing price bust or even a slowdown on the euro area economy. However, there is one simple indicator of the importance of housing prices in influencing domestic demand even in continental Europe where re-financing of mortgages is more costly and where home ownership is often much lower. The relevance of housing in the euro area countries can be illustrated by simply relating housing prices and the current account across euro area members. Since euro area members share the same exchange rate, most of any divergence in current accounts should thus be due to divergences in domestic demand. As Figure 7 shows, there is a rather close correlation between the current account and real housing prices, with the latter explaining 80% of the variance of the former. This suggests that some wealth effect might also be operating in continental Europe.

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<sup>5</sup> Selosse & Schrefler (2005, p. 13).

Figure 7. Housing prices and the current account: The experience of eurozone members (1998-2004)



#### 4.2 A housing overhang?

The most direct link between housing prices and domestic demand might be construction activity and in particular the construction of houses (dwellings).

As for the short run there seems to exist a rather close correlation between housing prices and building activity. Figure 8 below shows there has been a rather close correlation between (real house prices) and investment in housing. There are of course other factors that influence housing investment (interest rates, income growth, to name just the two most important), but it seems that the evolution of housing prices seems to have played a predominant role. Figure 8 also suggests that the rate of construction activity in the US reached in 2006 was actually somewhat below the level one would expect given its historical relationship with housing prices and the unprecedented level attained by the latter.

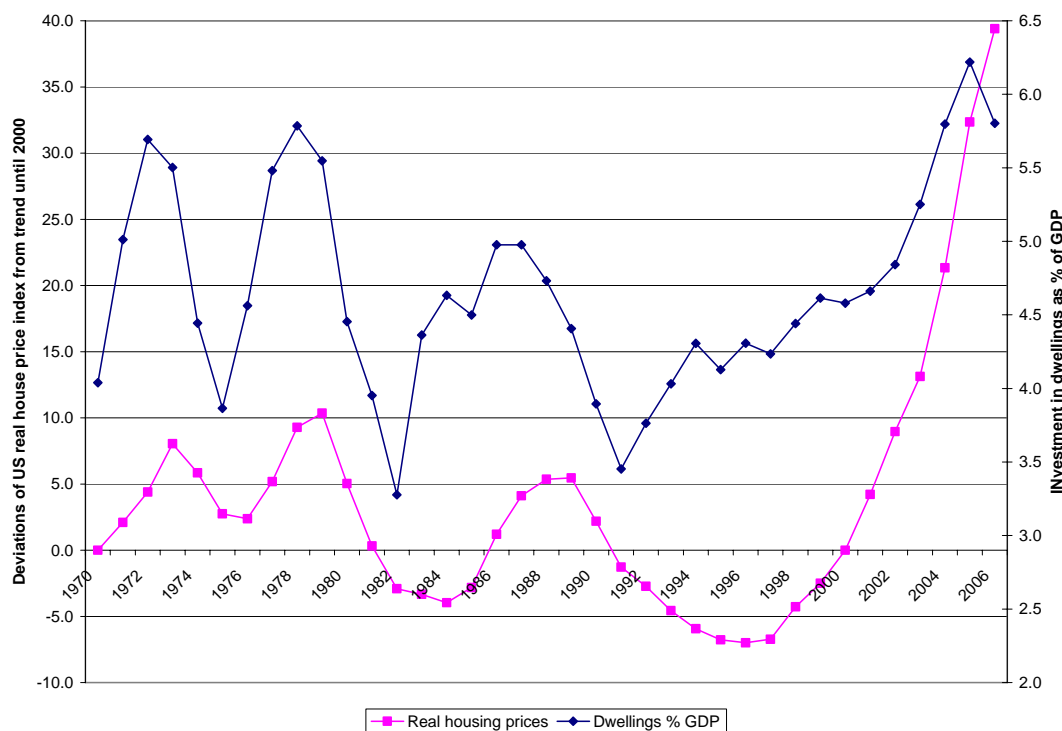
Unfortunately it is not possible to document a similar correlation for the euro area because the data are not available. (At least not for this long time span, which is necessary given the length of the typical cycle in real estate prices.) In the US household construction activity has increased by almost 3 percentage points of GDP since the trough experienced during the recession of the early 1990s (it went from about 3.5 to 6.5% of GDP). Should there be a real bust in the real estate sector in the US, it is thus conceivable that household building activity could drag down domestic demand by 3 percentage points through these channels as well.

The limited available data suggest that in Europe the relationship between housing prices and investment varies between countries and is in general somewhat weaker than in the US. The simple reason for the weaker correlation might simply be that tighter building codes in Europe and the lack of available land limit the degree to which new buildings can be constructed quickly in response to higher prices.

The experience of Germany and Japan shows that a real estate boom can leave a long-lasting legacy if the boom leads to a housing 'overhang', i.e. if simply too many houses are built. Given that buildings depreciate very slowly, a housing overhang can lead to a long-term weakness in construction activity. In Germany, for example, a combination of higher prices and very strong government subsidies led to an extraordinary expansion of the construction sector in the years

following unification. At its peak (1995), construction activity amounted to 14.5% of GDP, and over the next ten years it then fell back to a little above 8.5% of GDP. In Germany the fall in demand thus amounted to close to 6% of GDP.

Figure 8. US housing prices and investments in housing



In determining whether a housing boom has also led to a housing ‘overhang’ one has to take into account the time dimension. One or two years of a high rate of construction are not sufficient to create a substantial excess supply of housing. A housing overhang can thus be created only by a prolonged period of high investment. This paper proposes the following rough approach to calculate whether the housing boom has led to an overhang of available homes is to calculate the stock of ‘overinvestment’ in the following way: for each year one calculates the difference between the previous 20 year average and the actual value. The annual values of the differences (actual minus previous average) are then summed over the entire period: 2001-07. This calculation is done using both the narrow definition of construction of dwellings, i.e. home building, and overall construction. Both variables are measured as a % of GDP. This indicator can be thought of as a measure of the cumulated loss in domestic demand (compared to the last 7 years) that would result if construction activity to return to its longer-run norm. If this total is to be reached in a short time, say five years it would mean, in the case of Spain that demand for dwellings could drop by an amount worth 5 % of GDP and then stay at the lower level for the remainder of the adjustment period. Alternatively, as suggested by the German experience, the short term drop in growth could be smaller, but much more persistent.

It is apparent that two extremes co-exist in euroland. Spain (and even more so, Ireland) experienced a building boom that has led to an accumulated ‘excess’ equivalent to 30% of GDP if one looks at overall construction and only a little less, namely 25% of GDP if one looks at pure home-building. By contrast, in the other two large euro area countries with high housing prices, namely France and Italy, the supply response seems to have been sluggish: in both cases the 5-year average of actual building activity has been below the longer-run average (although lately it has risen somewhat).



Table 4. Estimate of housing (construction) overhang in key euro area countries (in overall construction activity and home building)

	Germany	Spain	France	Ireland	Italy
Construction	-19.1	30.2	-4.0	51.8	-5.5
Dwellings	-6.5	24.6	-8.6	44.3	-0.9

Source: Own calculations based on AMECO data.

Germany provides the opposite pole to Spain, as it has experienced a massive shortfall in construction activity if one takes the 1980-2000 period as ‘normal’. But this might be misleading for Germany since the 1990s do not represent a ‘normal’ period for that country, as explained above. Moreover, the shortfall in pure home-building seems minor, compared to overall construction. The latter includes infrastructure investment, which was temporarily very high when East Germany had to be brought up to Western standards in the early 1990s.

The average value of this measure of a housing overhang for the euro area (not shown) is zero for construction (data not available for dwellings for euroland). The two extreme national values disappear in the mean. Figures 9 and 10 show the evolution of construction activity as a percent of GDP over time for the key euro area countries and a transatlantic comparison between the US and the euro area averages.

Figure 9. Construction investment as % of GDP in euro area member countries (1991-2007)

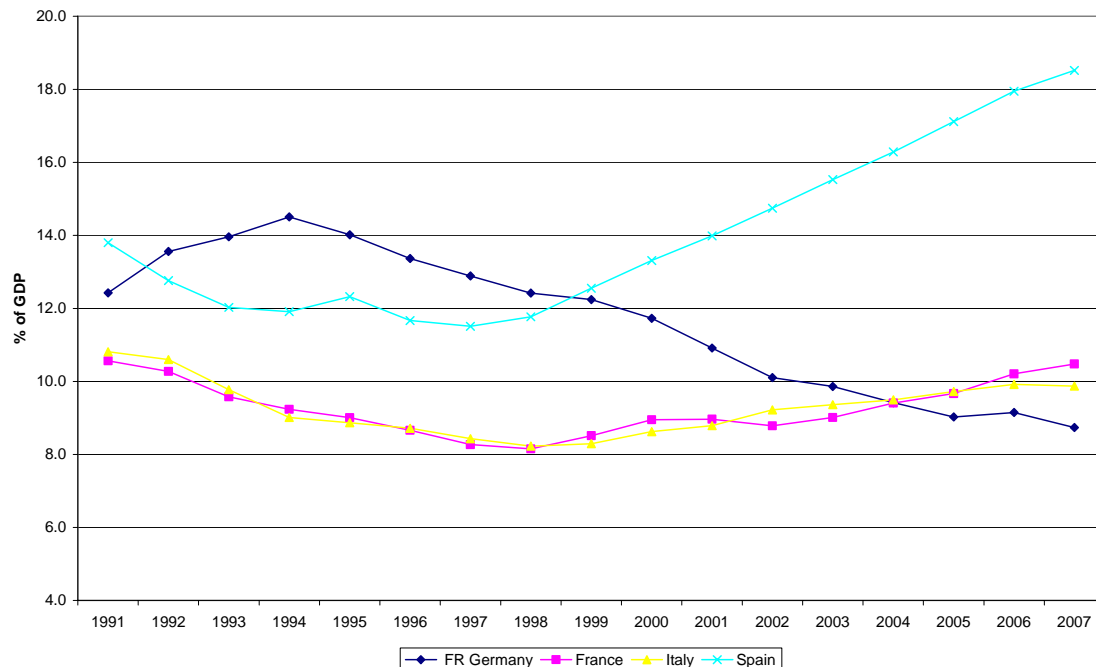
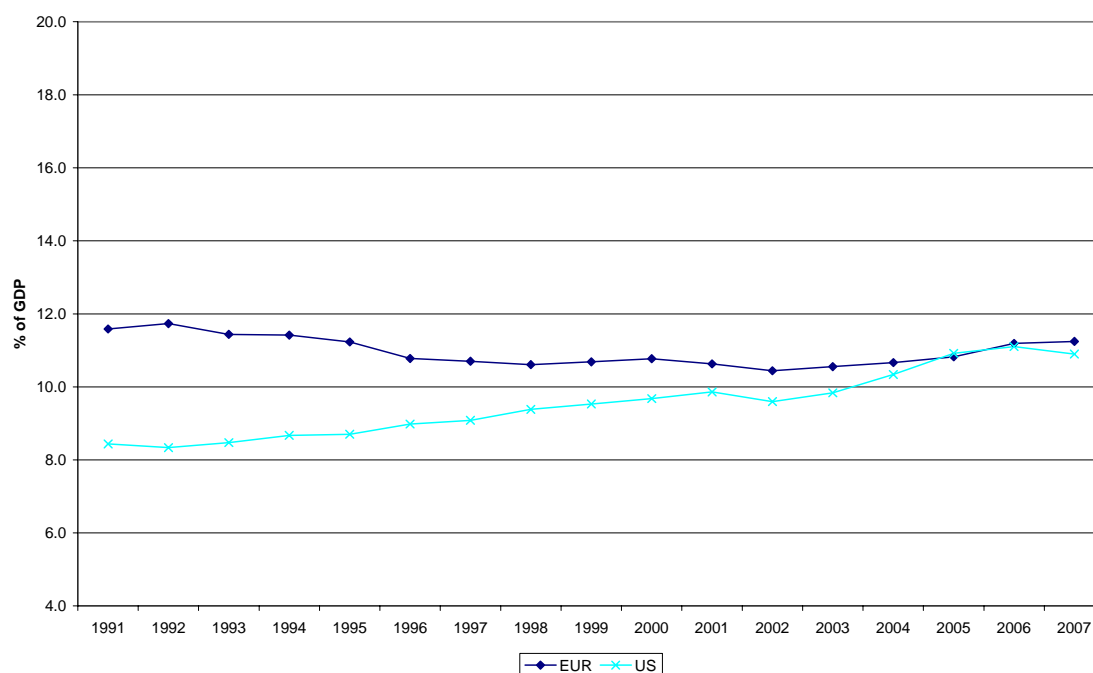


Figure 9 shows clearly the divergence between the two extremes – Spain and Germany – as well as the relative stability of construction activity in France and Italy. Figure 10 shows that construction has been almost exactly constant if one looks at the euro area average, but that it has increased trendwise in the US since about 1995.

Figure 10. Construction investment as % of GDP in the US and the euro area (1991-2007)



One key question for the global economy is whether there is a serious housing overhang in the US. The indicator proposed here suggests that the situation in the US is much better than, for example, in Spain. As was shown above, home-building had risen in 2006 to about 3% points of GDP above the long-term average in the US, but the cumulated ‘excess’ is ‘only’ about 7% of GDP. This relatively high level reached in 2006 implies that weaker demand for home building could constitute a drag on domestic demand of about 3 percentage points of GDP in the near future. The moderate level of the total housing overhang implies, however, that this loss of demand might be limited over time.

Table 5. Estimate of housing (construction) overhang in key OECD countries (overall construction activity and home-building)

	UK	US	Japan
Construction	1.3	4.6	-30.9
Dwellings	4.9	7.1	-10.0

Source: Own calculations based on AMECO data.

In the UK, the other Anglo-Saxon country with property prices above any historical norm, the potential overhang seems smaller than in the US. This might be due to the tighter restrictions facing builders in the UK, especially in south-west England. Nevertheless, the correction of the UK housing overhang over the next five years would still constitute a drag on demand of about 1 percentage point of GDP.

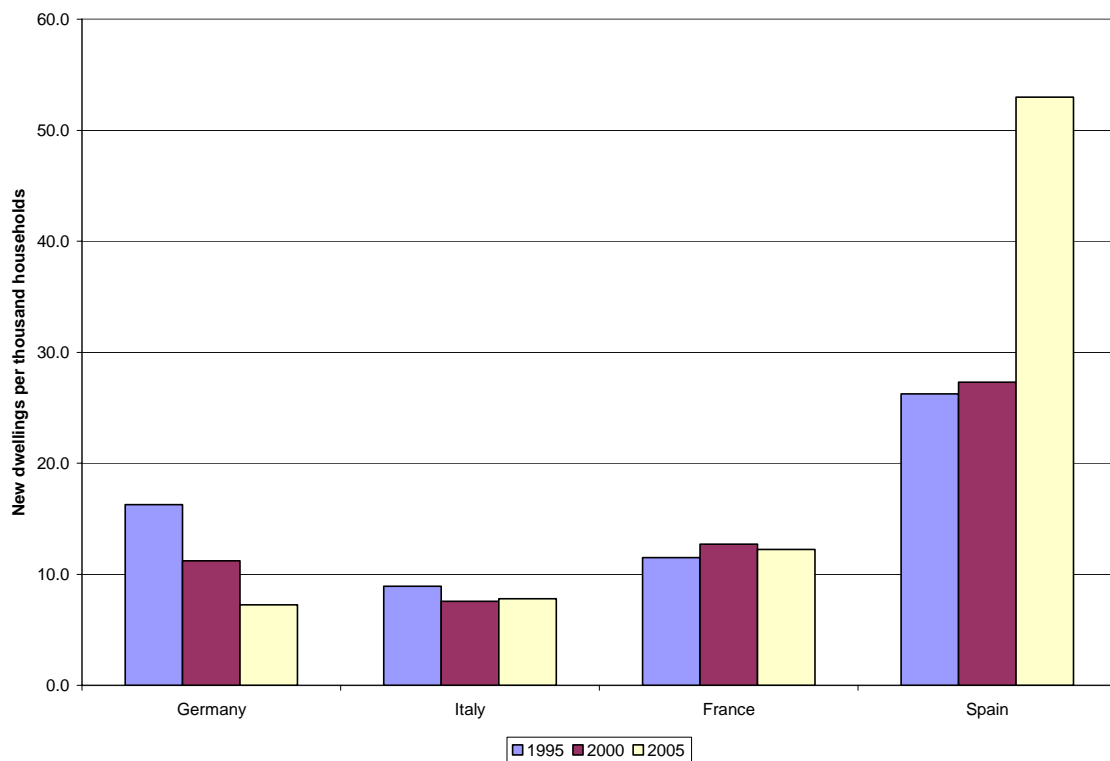
In both Anglo-Saxon countries, the overall construction overhang is smaller than the one for home-building as, apparently, other investment (infrastructure) has not increased recently.

In Japan it is difficult to find a stable long-term period of reference since the shares of GDP of both variables have been in uninterrupted decline since 1991.

Another way to check whether the current rate of construction is sustainable in the longer term is to look at the number of dwellings completed per household. Figure 11 confirms the relative positions of the major euro area economies in terms of a potential housing overhang. During 2005, the rate of construction of new dwellings in Spain (over 50 per 1,000 households) was more than six times higher than in Germany (around 8-9 per 1,000).

The Spanish value appears to be out of line with any estimate of a steady-state rate of building. Assuming that a typical house (or more realistically an apartment block) lasts 50 years (which corresponds to a depreciation rate of 2%), a rate of construction of new dwellings of 20 per 1,000 households would keep the stock of dwellings constant (per household). The current rate of construction in Germany is much below this measure of what would be a steady state, corresponding to the underinvestment measured above. By contrast, the rate of construction in Spain is almost three times higher than this benchmark value, suggesting that the country is rapidly accumulating a housing overhang.

Figure 11. Construction of new dwellings in Germany, Italy, France and Spain (1995, 2000 and 2005)



Source: Own calculations based on data from Balazs & Dubravko (2007) and Eurostat.

Even if one takes into account the relatively rapid rate of growth of population (and households) in Spain over the last years, which amounted to about 1-1.5% per annum over the last decade, the conclusion would not change. At this rate of population growth, one would expect that in equilibrium (i.e. if this growth were to continue forever) the rate of construction of new dwellings should be 30-35 per 1,000 households,<sup>6</sup> much below the current value. However,

<sup>6</sup> The steady state rate of construction (per household) should be the sum of depreciation and the growth rate in the number of households or 2% + 1.5%.

Spain has not been the only country in Europe to experience an increase in household formation. The difference between Spain and Italy, for example, amounts to about 1.4%, on average, since 1995. This difference would justify in the steady state a difference of 14 units per 1,000 households, compared to the observed difference of almost 40 that is apparent from the preceding graph.

*Table 6. Average rate of household formation in % per annum since 1995*

Germany	0.7
Spain	2.0
France	1.0
Italy	0.6

*Source:* Own calculations on Eurostat data.

The rate of construction of new dwellings in the three major continental European countries with constant populations (and similar, moderate rates of increase in the number of households) – France, Germany and Italy – has been around 10 per thousand households over the last decade. This would suggest that the rate of depreciation of housing is perhaps only 1% per annum. If this is true, this would mean that the rate of construction in Spain is even further away from equilibrium than estimated so far.

## 5. Transatlantic transmission of housing price trends?

Housing prices thus seem to be important even within the eurozone. How large is the risk that markets turn around in the US and the euro area at the same time? It was argued above that the deviations from the longer-term average of both the US and the European series for the price/rent ratio are of a similar order of magnitude.

Inspection of Figures 2 and 4 above suggests that during the 1970s and 1980 the euro area seems to have followed the US with a lag of about one and a half years, but that more recently the two series seem to follow the same trend. Since it is more difficult to detect turning points in the levels of this slow-moving variable Figure 10, illustrates the trans-Atlantic co-movement by using the (averaged annual) rate of change in real house prices.<sup>7</sup>

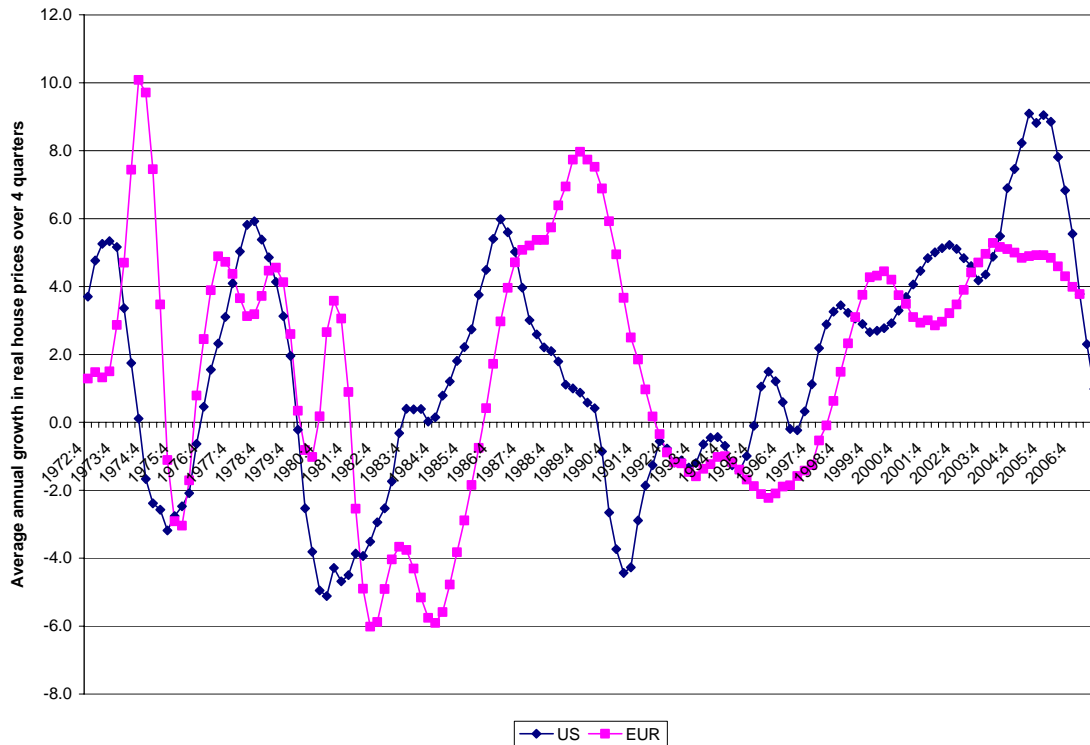
The rate of change is, of course, much more variable than the level of housing prices. But the series are still remarkably smooth given that they represent the (gross) return from holding an asset that is perhaps not very liquid, but that is being traded actively. In Figure 12 the US data is more variable and the very short run movements not well correlated, but it seems that for both series the trend has turned in late 2006.

Although house prices seem to have turned on both sides of the Atlantic, experience suggests that it would be wrong to expect a sudden ‘crash’ in the real estate market. Sharp declines in stock prices have indeed corrected excesses on more than one occasion. But real estate prices tend to move much more smoothly, in part because households seem reluctant to accept lower nominal prices and prefer to hold on to their homes even if real prices continue to decline for an extended period. In Japan, for example, the peak of 1989-90 was followed by (now) 16 years of gentle, but continuous decline in real housing prices.

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<sup>7</sup> The data in Figure 10 are adjusted for the trend; but this does not affect the picture because in rates of change the trend becomes just a constant.

Figure 12. Real housing price growth in a long-run perspective: The US and the eurozone (1973-2006)



## 6. Tentative conclusions

The main point of this contribution has been to document a remarkably close correlation between US and average euro area housing prices over the long run. This has not been widely noted beforehand because most observers have emphasised intra-euro area divergences (boom in Spain, slump in Germany). But it appears that the ongoing decline of prices in Germany has been more than compensated for by the boom in other parts of the euro area.

The stylised facts can be summarised as follows: There has been a tight correlation between US and euro area housing prices, with the latter following the former initially with a lag of about one to two years. More recently, the co-movement has become close to contemporaneous. On both sides of the Atlantic, prices (in real terms) have reached historical peaks and on both sides the upward movement had, until recently, accelerated. Since late 2006, prices seem to be declining in the US. The euro area data become available only much later. Hence it is not possible to determine whether housing prices have already turned on this side of the Atlantic as well. One key question for the ECB is now whether the usual pattern of (continental) Europe following the US will re-assert itself.

Given the sluggishness of housing prices, it seems likely that it will take some time before they actually decline on this side of the Atlantic as well. But it is also possible that the financial market turbulences caused by the US sub-prime lending sector will accelerate the ongoing slowdown of the housing sector in Europe.

While the very short-term outlook is not clear, it seems that prices will sooner or later have to fall over the medium run, or at best stagnate in continental Europe as well. Over the last three

decades, prices on both sides have tended to follow three slow-moving boom-bust cycles. All previous peaks were followed by several years of declining housing prices (in real terms) and there is no reason to assume that this cycle will be any different. At the very least, one must assume that the probability of a decline in housing prices has increased as prices have reached unprecedented levels.

This paper has concentrated on the price/rent ratio as an indicator of overvaluation of housing since any change in the demand for housing (e.g. immigration) should be reflected in both prices and rents. However, over the last decade, the price/rent ratio has increased in parallel with the price of housing as rents have in general not increased by more than the overall consumer price index. This suggests that the current level of house prices does not simply reflect a higher demand for housing.

Should policy-makers be concerned about the behaviour of house prices? There is little evidence in the euro area of large-scale 'sub-prime' lending. But the evidence shown above suggests that house prices seem to have an important impact on domestic demand, with wide variations among individual countries. In France and Italy, where house prices have increased almost as much as in the US, there is no evidence of a housing overhang. A downturn in housing prices might depress consumption somewhat, but not construction investment. By contrast, in Spain and Ireland, construction investment has increased to levels (18-20% of GDP) not seen in any other OECD country except Japan. In these two countries, lower housing prices are likely to be associated with a sharp and prolonged drop in domestic demand. Germany provides the mirror image to these two cases in that construction activity in Germany has now for some time been below average. All in all one can thus conclude that the coming downturn in housing prices should not have a strong impact on the eurozone average, but it is likely to lead to serious tensions within the area.

## References

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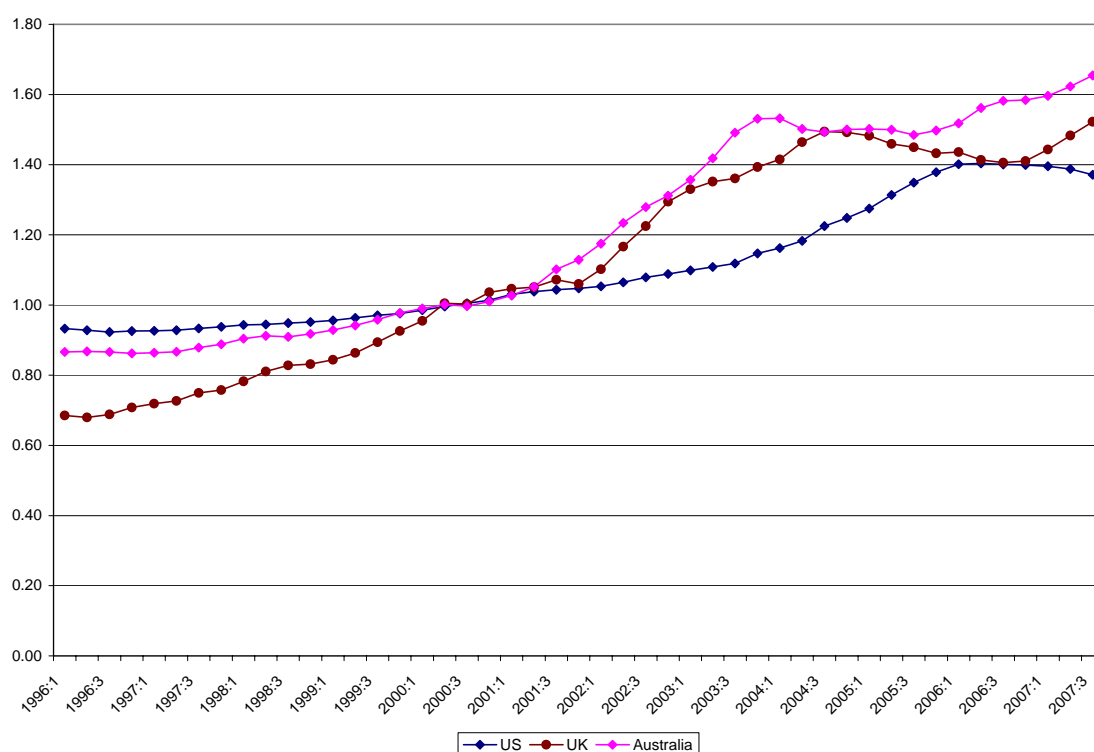
- Balazs, Egert and Dubravko Mihaljek, (2007) “Determinants of house prices in central and eastern Europe”, BIS Working Papers No. 236, Bank for International Settlements, Basle, September 2007.
- Case, Karl and Robert Shiller (2003), “Is there a Bubble in the Housing Market?”, Brookings Panel on Economic Activity, Brookings Institute, Washington, D.C.
- Catte, Pietro, Nathalie Girouard, Robert Price and Christophe André (2006), *Housing Markets, Wealth and the Business Cycle*, Economics Department Working Papers No. 394, OECD, Paris, January.
- Ceron, Jose and Javier Suarez (2006), “Hot and Cold Housing Markets: International Evidence”, draft, January.
- Girouard, Nathalie, Mike Kennedy, Paul van den Noord and Christophe André (2006), “Recent House Price Developments: The Role of Fundamentals”, Economics Department Working Papers No. 475, OECD, Paris, January.
- Greiber, Claus and Ralph Setzer (2007), “Money and housing – evidence for the euro area and the US”, Deutsche Bundesbank, Discussion Paper Series 1: Economic Studies, No. 12/2007.
- OECD (2005), *Economic Outlook* No. 78, Chapter III, “Recent House Price Developments: The Role of Fundamentals”, pp. 193-234.
- Posen, Adam (2003), “It takes more than a bubble to become Japan”, Institute for International Economics, Working Paper No. 03.09, Washington, D.C., October.
- Selosse, Camille and Lorna Schrefler (2005), “Consumer Credit and Lending to Households in Europe”, ECRI (European Credit Research Institute), Brussels.
- Shiller, Robert (2005), *Irrational Exuberance*, Princeton, NJ: Princeton University Press, second edition.

## Annex 1

### Recent cases of rebounds in Anglo-Saxon countries: A reason to relax?

The UK and Australia, to name just two Anglo-Saxon countries, have also experienced massive run-ups in their housing markets. But although the markets slowed down considerably some years ago, their economies have not collapsed and in some cases housing prices even resumed their upward trend, at least for a while, i.e. today. It is thus tempting to use the experience of the UK and Australia as a counter example to the thesis that housing prices have reached a worrisome level in the eurozone (and in the US). As Figure A1 shows, real housing prices in these two countries have indeed reached even more extreme levels and are now about 100% above the long-run average. However, in both the UK and Australia, the increase in real estate prices seems to have stopped over the last year without leading to a collapse of the respective economies.

Figure A1. House prices relative to rents: The Anglo-Saxon world



One might be tempted to infer from the relative good performance of the UK and Australian economies after the end of their respective housing booms that ‘resilience’ to housing booms and busts has increased. However, there are several reasons why it is clearly too early to conclude that housing booms can pass without any negative effects.

The first reason is simply that too little time has passed since the peak was reached in these two countries. As emphasised above, the decline in housing prices following a period of overvaluation tends to be stretched over a long period. The aftermath of a strong overvaluation in the housing market is thus not a matter of a sharp, short downturn, but a long period of weak domestic demand. Even in Japan, the first year of zero growth was 1993, which was several years after the housing (and stock) market had peaked.

Moreover, both the UK and Australia have strongly benefited over the last year (their first year without real estate price increases, but yet no fall) from a significant terms-of-trade gain due to

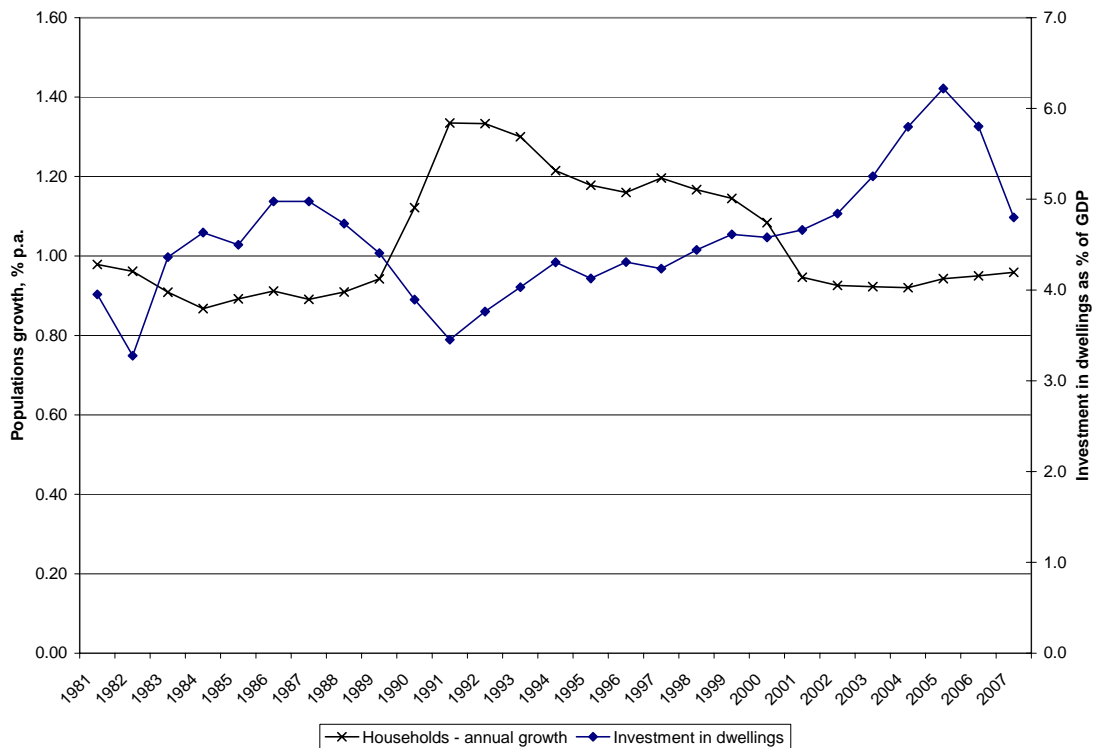


higher raw material prices. For the UK, this income effect might have been compounded by the increase in housing demand through the sudden influx of workers from Eastern Europe. As argued above, the best way to take these factors into account is to look at the price-to-rent ratio. This variable gives a different picture for these countries for the last years, as can be seen from Figure A1 below. In the case of the UK the price/rent ratio has actually increased over the most recent period for which data are available as rents have increased by more than prices. In Australia the price/rent ratio has also been roughly stable (with some fluctuations).

## Annex 2 Housing investment and population growth

When a housing boom is underway, it is often argued that it can be explained by fundamental factors. One key factor in housing should be population growth. Could one explain the expansion of home-building activity in the US until 2006 by increased population growth, for example via higher immigration? This is not possible since population growth has actually slowed down somewhat in the US over the last decade. Over the last 25 years, population growth peaked at close to 1.4% p.a. in 1991, right at the time of the last major recession, when home building showed a trough at 3.5% of GDP. Since 1991, home building has steadily expanded (to above 6% of GDP) while population growth has steadily declined to below 1% p.a. It might be argued that what matters for building activity is not so much population growth, but the growth in the number of households. But this variable can also not be used to explain the observed increase in building activity over the last years since household formation has not notably accelerated over the last decade. The figure below shows that there is no correlation between housing investment and the growth in the number of households. The latter has been subject to considerable short-term fluctuations, but without any clear trend emerging over the last decade.

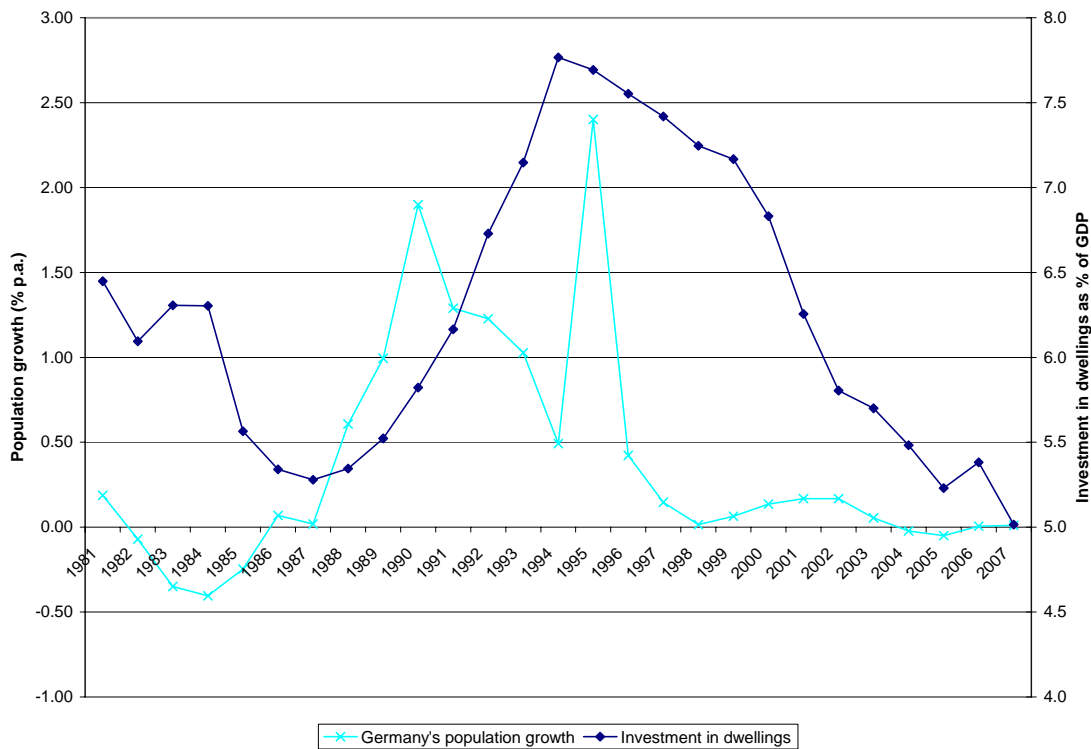
*Figure A2. Rate of household formation and investment in dwellings*



In the case of Spain, it is often argued that the present very high levels of construction activity can be justified by a combination of increased demand by foreigners for villas or apartments on the Mediterranean and high population growth driven by immigration. As for foreign demand, it is difficult to understand why Northern Europeans should buy mainly housing in Spain and not also in other Mediterranean countries, for example Italy, which offers a broadly similar combination of climate and culture.

Population growth in Spain has indeed increased (in contrast to most other euro area member countries) over the last decade. However, it remains to be seen whether this is a permanent phenomenon. There might be considerable positive feed back effects from a construction boom to a strong demand for labour and, hence, immigration. However, this mechanism might also work in the reverse direction should the housing boom stop and then reverse. The experience of Germany in the early 1990s provides a cautionary tale in this respect: Even before unification Germany's started to receive a considerable number of immigrants, mostly ethnic Germans from Eastern Europe and the former Soviet Union who, thanks to the loosening of political controls could "return" to Germany where they were granted immediate citizenship and full social security benefits. By 1994-95 strong immigration from this source, and other immigrants from disintegrating Yugoslavia, had increased the German population by around 6%. This influx was one of the factors behind the German construction boom which lasted until about 1995. After 1995 immigration suddenly stopped (and the building boom turned into a slow decline (see Figure A3 below).

Figure A3. Population growth and investment in dwellings in Germany



The increase in the German population until 1995 was similar to the increase in the Spanish population over the last 5 years, which was somewhat above 7%. It thus remains to be seen what happens to immigration in Spain should the economy slow down sharply. If the German experience is any guide a long drawn out vicious circle might establish itself in which lower growth leads to lower immigration and less construction, which in turn lowers growth again. The German experience (as that of Japan earlier) also suggests that construction booms do not end suddenly. In Germany it took ten years for construction investment fall from 14.5 to 8.5% of GDP. In Japan the down turn in construction which started after 1990 continues until today.

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