



## Bubbles in real estate?

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

**Daniel Gros**

#### Abstract

It is now generally agreed that housing markets constitute a key determinant of domestic demand. Policy-makers and market participants routinely add a health warning to their outlooks for the US and global economy related to the US housing market, based on the assumption that growth in US domestic demand will slow down dramatically once housing prices start to decelerate. It is generally assumed that the eurozone does not face a similar prospect, because areas of 'froth' (Spain, for example) co-exist alongside areas of declining prices (Germany).

This note presents a composite indicator for euro area housing prices and compares its evolution over the long run with that of the US. The main findings are quite simple:

- 1) The euro area aggregate index of real housing prices has risen almost as much as that of the US and is now (together with that of the US) about 40% above its 30-year average. This is almost exactly equal to the overvaluation of Japanese real estate at the height of the Japanese bubble, which was then followed by a decade of 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, but with a lag of about two years.

An ancillary finding is that the overvaluation (compared to a longer-term historical average) is even larger for the UK and Australia.

Daniel Gros is Director of the Centre for European Policy Studies (CEPS). Many thanks to Thomas Mayer and Angel Ubide for valuable comments and to Funda Celikel for excellent research assistance. This version has been slightly revised from the original study published 7 February 2006.

CEPS Working Documents are published to give an indication of the work within various research programmes at CEPS and to diffuse relevant works from external experts in these fields. Unless otherwise indicated, the views expressed are attributable only to the author in a personal capacity and not to any institution with which he is associated.



# Contents

---

1. Introduction.....	1
2. The data.....	1
3. A simple message from the data .....	3
4. The economic impact of housing prices in Europe .....	5
5. The recent Anglo-Saxon experience: A reason to relax? .....	7
6. Tentative conclusions.....	8
References.....	10



# **BUBBLES IN REAL ESTATE?**

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

**DANIEL GROS**

---

### **1. Introduction**

The global economy is currently experiencing a period of high liquidity growth and increasing asset prices. It has been widely observed that one important asset class, namely housing, might be a key to understand macroeconomic developments in a number of country, and in particular the US.

The boom in the US housing market has become such a fixed point that most discussions about the global economy contain a health warning related to the US housing market on the assumption that US growth in consumption will slow dramatically once housing prices start decelerating. Economic forecasts for the euro area do not contain such warnings, however, because it is generally assumed that the eurozone does not face a similar prospect, given that areas of ‘froth’ (Spain, for example) co-exist alongside areas of declining prices (Germany). This widely held assumption that housing prices in the euro area have on average behaved differently from those in the US, however, needs to be questioned. This paper suggests that it actually is not warranted. We observe that the euro-area housing market is in a boom phase, which has resulted in an overvaluation that is not too dissimilar from the one observed in the US.

Section 2 starts with a brief comparison of the official ECB index of housing prices and the index presented here (which is available for a longer period). Section 3 then shows and compares the longer-run evolution of housing prices in both the US and the euro area. Section 4 briefly discusses the experience of the three ‘Anglo-Saxon’ countries where housing prices have recently stabilised (or even started to decline). Section 5 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 goes back only to 1982.<sup>1</sup> Moreover, data provided by the ECB are mostly annual, 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 whether using the OECD data might lead to a bias. But this does not seem to be the case, as we demonstrate below.

---

<sup>1</sup> Also, it is only in nominal terms, whereas one should look at housing prices in real terms. In principle, this should not be a problem as the required real index should in principle be easy to calculate with the help of a euro area deflator. However, the latter is not available from the ECB beyond the 1990s. Hence, one would have to mix ECB and other data sources for any real house price index going back much more than ten years..

In a first step, the ECB housing price index was thus 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

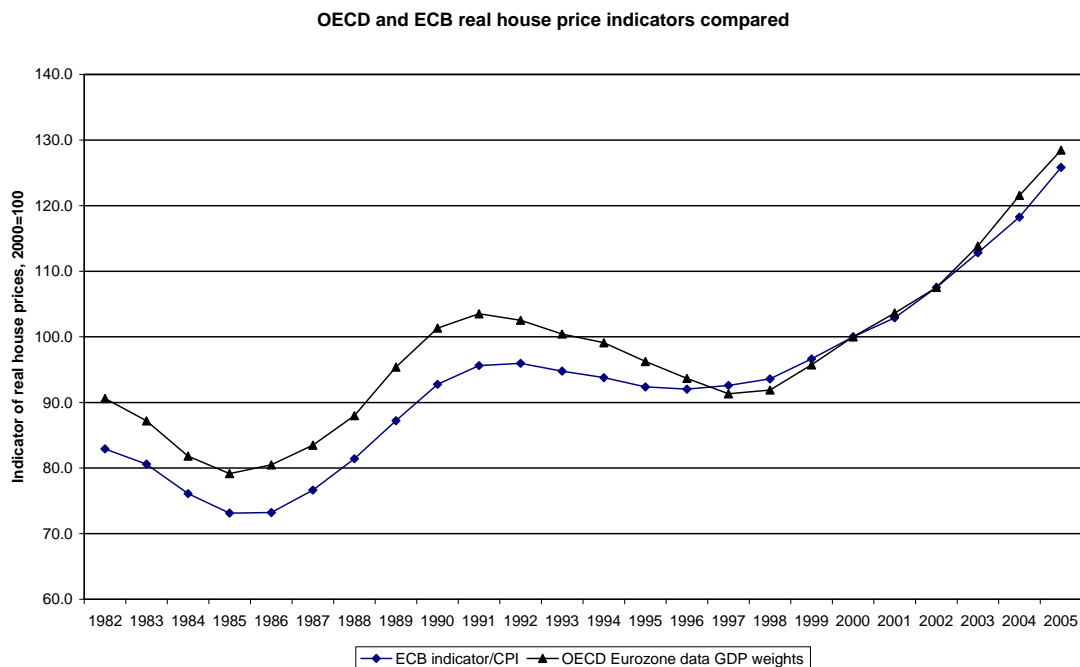


Table 1 below shows the summary statistics for the two series. The overall increase in real housing prices was actually 8 percentage points higher if measured by the ECB data than by the OECD-based data. Comparing the end-2005 value of the index to its longer-run average yields a similar conclusion: 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 2005/1982	151.8	151.5
Average 1982-2005	93.3	95.3
2005 value/average	134.9	137.1

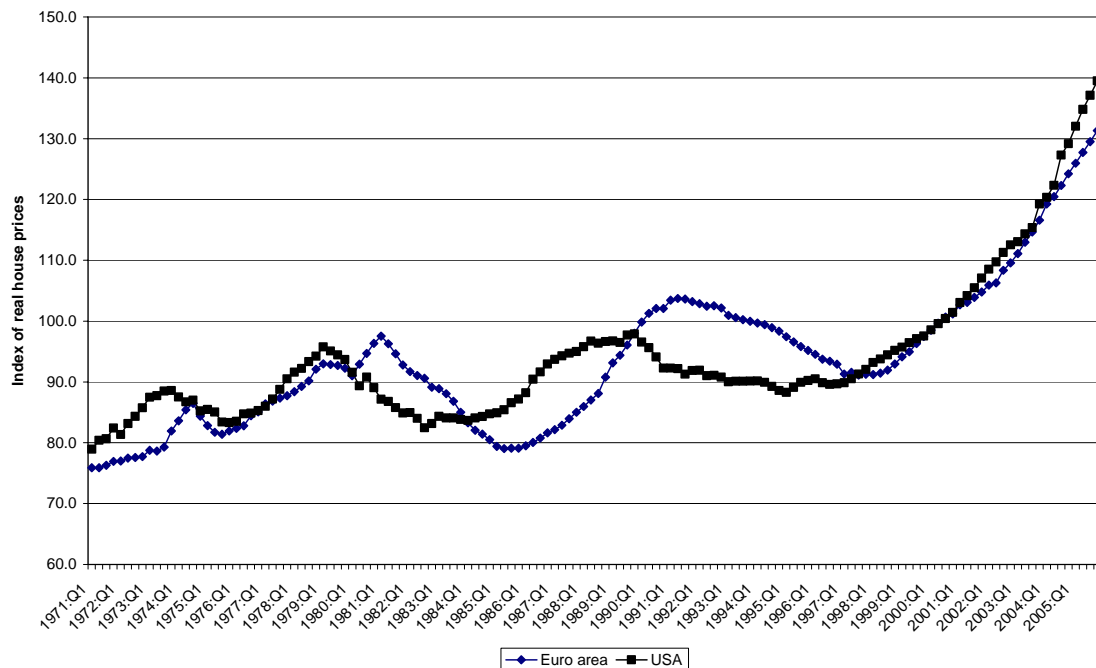
Source: Own calculations based on ECB and OECD data.

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 reveals 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. It is often argued that housing price inflation in the euro area has on average been contained over the last years, in particular during 2005, when it reached ‘only’ 7%. However, what seems worrisome is not so much the increase during last 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.

The implicit hypothesis adopted here, and which would be confirmed by a simple reading of the data until about 2000, is that (real) housing prices have a tendency to revert to their mean (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 mean. The marginal cost of producing new housing has not changed much recently (or in the longer run). New houses can thus be produced at essentially constant marginal cost without any clear limit. 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). The OECD (2005) analyses national housing markets separately and finds strong evidence for overvaluation in only a few cases (namely, the UK, Ireland and Spain).<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 (isolation, quality of finishing, etc.). However, it is unlikely that these factors change greatly over the space of a few years. Moreover, housing is not the only good (or rather service) whose quality increases over time. If one wants to argue that better quality justifies a secular increase in housing prices one would have to argue that the increase in the quality for housing is stronger than on average for the goods (and services) that make up the consumer price index. Viewed in this context one might even argue that the quality of housing has increased less than that of cars or consumer electronics, for example. Finally, these factors do not seem to have been an obstacle to the decline observed in Japan (see also Table 2 below).

*Table 2. Housing prices by decade (average levels in real terms)*

	<b>Average 1970-1980</b>	<b>Average 1981-1990</b>	<b>Average 1991-1998</b>	<b>Average 1999-2005</b>	<b>End 2005/30-year average</b>
US	86.50	89.76	90.89	112.62	151.1
Japan	84.85	105.50	116.93	91.70	76.5
Eurozone	84.75	88.27	97.33	110.13	142.1
OECD average	82.81	90.60	97.50	109.49	139.0

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

As discussed above it is difficult to determine a priori whether or not real house prices should have a long term trend upwards. Quality improvements occur in many goods, but their prices do not necessarily increase. Zoning restrictions are often mentioned a reason, but they apply only to limited areas and cannot thus be held responsible for driving up a continent-wide average. Given this uncertainty one way to read the data would be to argue that the average prices increase observed until 2000 (roughly the start of the recent acceleration in prices) might be considered justified by fundamental. The price index is normalised at 100 for the year 2000 and it started in 1970 at around 80 (for both the US and the euro area). This implies an increase of around 25% over 30 years. A continuation of this trend would have ‘justified’ a further increase

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

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



of around 4 % between 2000 and 2005. Even allowing for a secular trend increase in real housing prices would not change the conclusion that the present level constitutes a record on both sides of the Atlantic.

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

The key reason why US housing prices have attracted so much attention is that a property price crash or just a deceleration of the rate of increase of housing prices in the US would almost certainly weaken private consumption through wealth effects and increased uncertainty about the economic outlook. This is well known, but the data presented here imply that the same danger exists for the euro area. 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 of 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 quite similar risk.

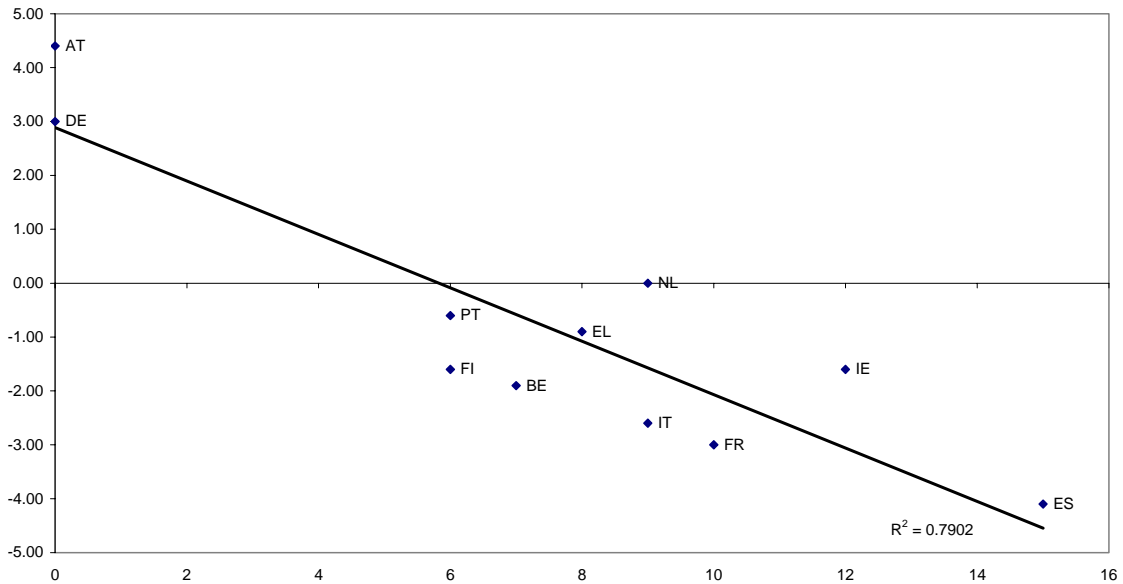
Two important characteristics of the housing market are actually quite similar on both sides of the Atlantic: Home ownership rates are similar in the euro area (64%), Nordic countries (62%) and in the US (68%). Another similarity between the eurozone and the US is that, as a rule of thumb, families invest often 6-7 times their annual income in housing. This implies that a movement of housing prices of 10 % can have a very strong impact on actual or perceived wealth. 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 slowing down 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 house 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 3 below shows, there is a rather close correlation between (changes in) the current account and (changes in) real housing prices, with the latter explaining 80% of the variance of the former.

---

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

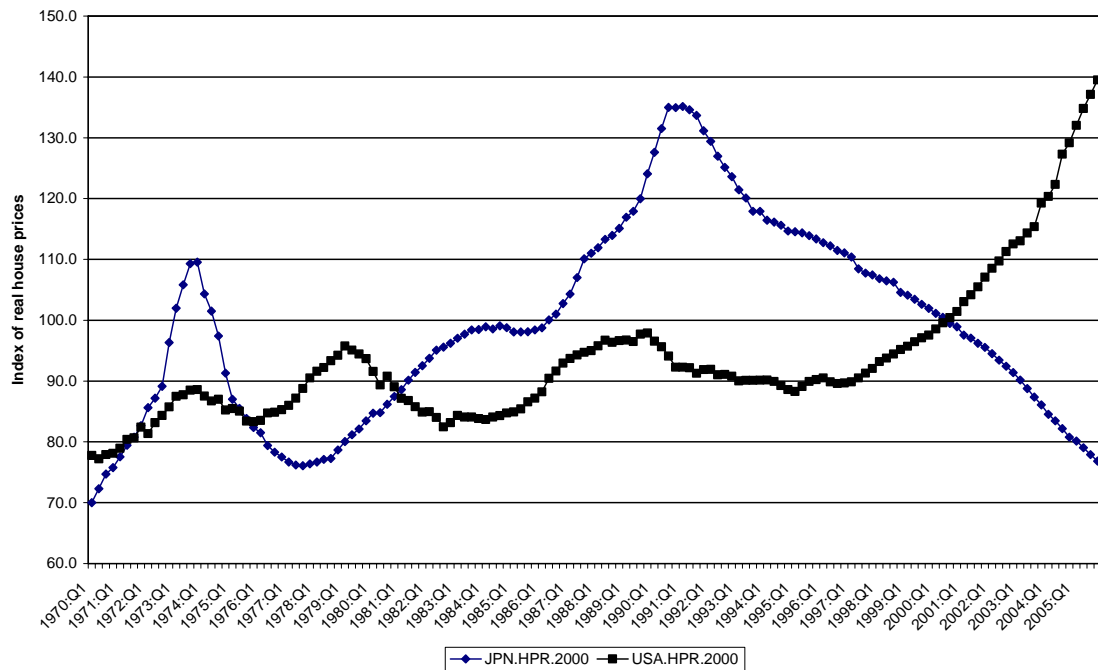
Figure 3. Housing prices and the current account: The experience of eurozone members (1998-2004)



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? Figure 2 suggests that the euro area seems to follow the US with a lag of about two years.

How large is the overvaluation reached so far in the US and the euro area (at least compared to the longer-term average)? A comparison with the Japanese experience shown in Figure 5 suggests that the situation might be more serious than widely recognised.

Figure 5. Real housing prices in a long-term perspective: A comparison of Japan and US



The 30-year average for Japan is almost exactly equal to 100 and the peak value was close to 140 – an overvaluation of around 40%. For both the euro area and the US, the current value of the index is around 130-140, compared to their longer-run averages of close to 90, this also implies an overvaluation of over 40%. This does not imply that the EU (or the US) will have to expect a similar economic performance as Japan's over the last decade, but it does imply a serious and long drawn-out correction in housing prices cannot be ruled out.<sup>6</sup>

The straightforward graphs of housing prices for the G-3 used so far illustrate two regularities: housing prices seem to move in long-term cycles and are much smoother than stock markets.

This implies 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 house even if real prices continue to decline for an extended period. In Japan, for example, the peak of 1989-90 was followed by (now) 15 years of gentle, but continuous decline in real housing prices.

## 5. The recent Anglo-Saxon experience: 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 have slowed down considerably over the last year their economies have not collapsed. 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 6 shows, real house 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.

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.

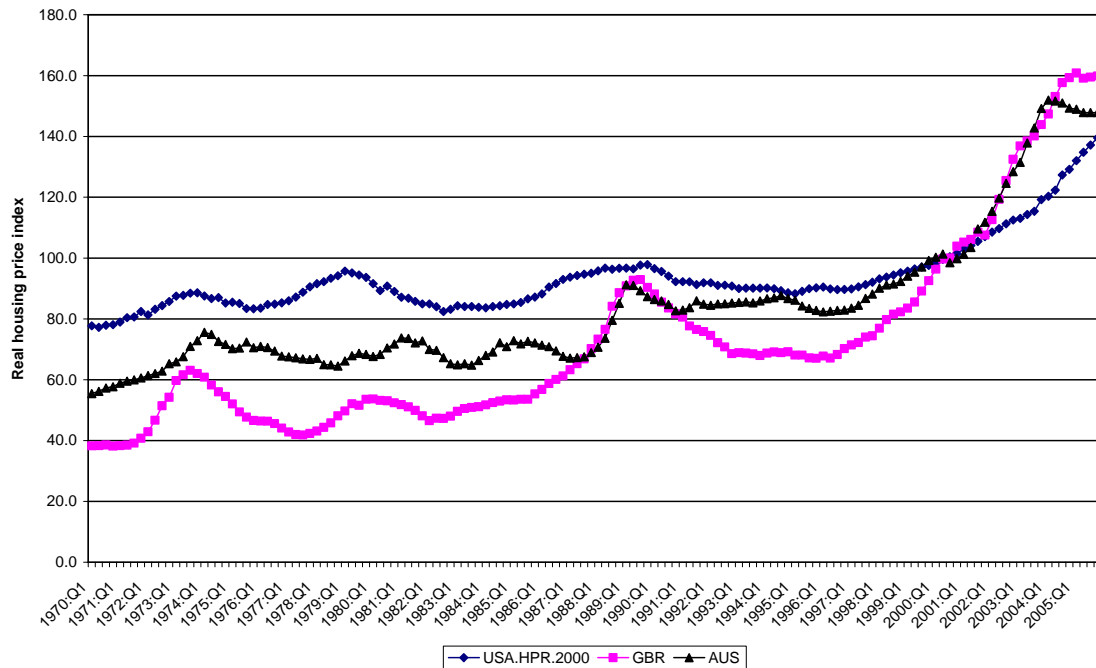
The first reason is simply that too little time has passed since the peak was reached in these two countries. As emphasised above, the decline in house prices following a period of overvaluation tends to be stretched over a long period. The aftermath of a strong overvaluation in the housing market is 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, the increase in crude oil prices implies a gain, relative to the eurozone economies, of between 1-2% of GDP. Only the next five years can show whether the extraordinary increase in housing prices in the Anglo-Saxon economies will be corrected without a significant cost in terms of growth.

---

<sup>6</sup> For more on the special case of Japan, see Posen (2003).

Figure 6. Real housing prices in the longer run: The Anglo-Saxon world

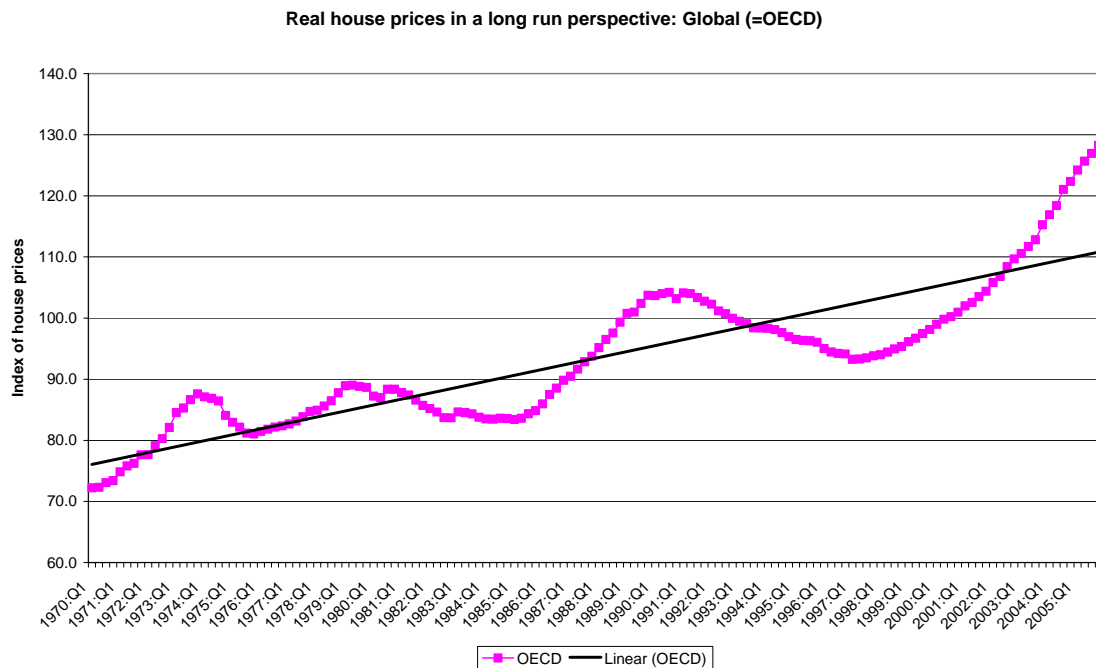


## 6. Tentative conclusions

The main point of this contribution has been to document a remarkably close correlation between US and average euro area housing prices. This phenomenon has not been widely noted beforehand because most observers had put the emphasis on 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 with a lag of about two years for over 30 years. On both sides of the Atlantic, prices (in real terms) have at present reached an historical peak and on both sides the upwards movement has accelerated over the last years. Over the last three decades, prices on both sides have tended to follow three slow-moving boom-bust cycles. Indeed, as Figure 7 shows, this applies even to the global (OECD) average. This figure uses a GDP weighted average of real house prices of OECD countries. This overall average is rather close to both the euro area and the US index (for the simple reason that the US and the euro area together account for about two thirds of the OECD total). Figure 7 also shows the trend line that seems to be present in the data. It is apparent, however, that the level reached in 2005 is far above what would be justified by the longer-term trend. Indeed the difference between the trend line and the actual data is at present at a record level.

Figure 7. Housing booms : A global phenomenon?



What are the policy implications of the simple observation made in this paper? It is not easy to determine whether or not the level of housing prices reached now in the euro area (as on the other side of the Atlantic, and in general globally) represents an overvaluation whose correction will start soon since there has been a slight upwards trend in housing prices over the last decades. However, the discrepancy between the trend and the actual values is now at a record level. Experience so far thus suggests caution. All previous peaks were followed by several years of declining housing prices and there is no reason to assume that this cycle will be different. At very least one must assume that the probability of a decline in housing prices has increased as prices have reached unprecedented levels. This also suggests that the probability must be high that further increases will in future have to be corrected, possibly involving considerable economic cost. Given the unprecedented increases in the expansion of real estate lending over the last year (up 11% during 2005), this implies that the state of the euro area real estate market should give the ECB (and regulators) reason to be concerned.

## References

---

- 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, Paris January.
- 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.

## About CEPS

Founded in 1983, the Centre for European Policy Studies is an independent policy research institute dedicated to producing sound policy research leading to constructive solutions to the challenges facing Europe today. Funding is obtained from membership fees, contributions from official institutions (European Commission, other international and multilateral institutions, and national bodies), foundation grants, project research, conferences fees and publication sales.

### Goals

- To achieve high standards of academic excellence and maintain unqualified independence.
- To provide a forum for discussion among all stakeholders in the European policy process.
- To build collaborative networks of researchers, policy-makers and business across the whole of Europe.
- To disseminate our findings and views through a regular flow of publications and public events.

### Assets and Achievements

- Complete independence to set its own priorities and freedom from any outside influence.
- Authoritative research by an international staff with a demonstrated capability to analyse policy questions and anticipate trends well before they become topics of general public discussion.
- Formation of seven different research networks, comprising some 140 research institutes from throughout Europe and beyond, to complement and consolidate our research expertise and to greatly extend our reach in a wide range of areas from agricultural and security policy to climate change, JHA and economic analysis.
- An extensive network of external collaborators, including some 35 senior associates with extensive working experience in EU affairs.

### Programme Structure

CEPS is a place where creative and authoritative specialists reflect and comment on the problems and opportunities facing Europe today. This is evidenced by the depth and originality of its publications and the talent and prescience of its expanding research staff. The CEPS research programme is organised under two major headings:

#### Economic Policy

Macroeconomic Policy  
 European Network of Economic Policy  
 Research Institutes (ENEPRI)  
 Financial Markets, Company Law & Taxation  
 European Credit Research Institute (ECRI)  
 Trade Developments & Policy  
 Energy, Environment & Climate Change  
 Agricultural Policy

#### Politics, Institutions and Security

The Future of Europe  
 Justice and Home Affairs  
 The Wider Europe  
 South East Europe  
 Caucasus & Black Sea  
 EU-Russian/Ukraine Relations  
 Mediterranean & Middle East  
 CEPS-IISS European Security Forum

In addition to these two sets of research programmes, the Centre organises a variety of activities within the CEPS Policy Forum. These include CEPS task forces, lunchtime membership meetings, network meetings abroad, board-level briefings for CEPS corporate members, conferences, training seminars, major annual events (e.g. the CEPS Annual Conference) and internet and media relations.



**CENTRE FOR  
 EUROPEAN  
 POLICY  
 STUDIES**

**Place du Congrès 1 • B-1000 Brussels  
 Tel: (32.2) 229.39.11 • Fax: (32.2) 219.41.51  
[www.ceps.be](http://www.ceps.be) • [info@ceps.be](mailto:info@ceps.be)**