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Housing markets in OECD countries

Risks remain in Europe

March 3, 2010

The collapse of house prices in many industrial countries set the stage for the financial crisis and recession. Many observers therefore regard a stabilisation of housing markets as an important condition for sustainable economic recovery. In this article we discuss how far the correction of house prices has progressed in Europe and the US.

Based on a range of indicators we find that the correction is fairly advanced in the US but has still a considerable way to go in Europe. Further adjustment seems likely in Spain, Ireland, the Netherlands, but also Italy, France, and, to a somewhat lesser extent, in the UK. The need for further house price adjustment in these countries poses risks to both the banking sector and economic growth.

While house price adjustment is advanced or under way in the industrial countries, there is an increasing risk of new bubbles in other regions of the world. This holds in particular for Asian housing markets. House prices have already increased above pre-crisis levels in Shanghai and Hong Kong and they are close to their previous peak in Singapore.

Overview of housing market indicators

	Price/ income ratio	Mortgage/ income ratio	Fundamental regression model	Price/rent ratio	Excess supply risk
US	fair	cheap	fair	slightly elevated	medium risk
Euro area	slightly elevated	cheap	no model	elevated	medium risk
UK	elevated	cheap	elevated	elevated	low risk
DE	cheap	cheap	cheap	cheap	low risk
FR	elevated	cheap	elevated	elevated	medium risk
ES	elevated	cheap	mixed results	elevated	high risk
IE	elevated	cheap	fair	elevated	high risk
IT	elevated	cheap	elevated	elevated	medium risk
NL	elevated	elevated	elevated	elevated	medium risk
SE	elevated	cheap	slightly cheap	elevated	low risk
NO	elevated	cheap	mixed results	elevated	medium risk
FI	fair	cheap	slightly cheap	elevated	medium risk

Source: DB Research

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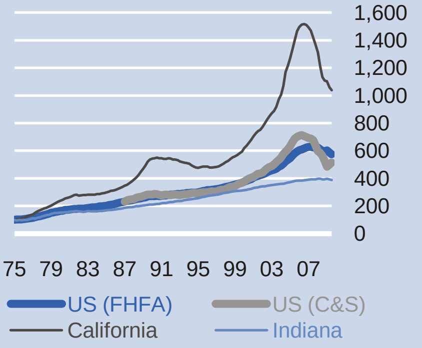
Introduction

The sharp decline of house prices in the US – and with some time lag in many other industrial and emerging markets – had been the trigger not only for the financial crisis but also for the severe global economic downturn. It has therefore been argued that a stabilisation of the housing markets is an important precondition for a return to self-sustained economic growth.

The important question for 2010 is therefore: Have house prices touched bottom? In fact, the Case-Shiller house price index for the US has picked up since spring 2009 after a decline of one-third over roughly three years. Similarly, in the UK house prices started to rise in April 2009 – after having fallen by 20%. Still, this turnaround was only achieved on the back of significant rescue packages for the economy and the housing markets in particular. The question then is, have housing markets in the US, the UK and in other key OECD countries sustainably overcome downward pressures? In this paper we analyse the current situation on 11 OECD housing markets.

House prices in the US
1975=100*



* Case-Shiller was indexed to FHFA-value for Jan 1987

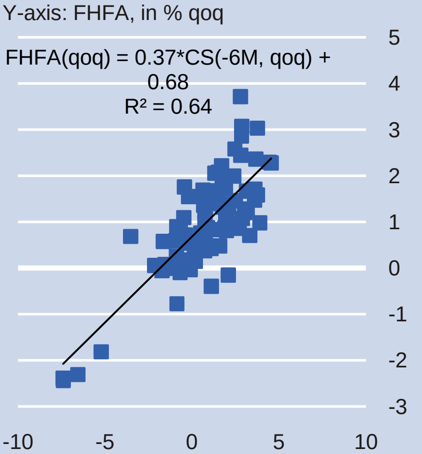
Sources: Case/Shiller, FHFA 1

House price developments in the US and the euro area

According to the US Federal Housing Finance Agency, house prices in the US started to fall after Q1 2007 and had not yet reached bottom in Q3 2009 after an almost 10% drop. This seems to contradict the Case-Shiller data and therefore needs qualification in two respects: First, the FHFA index is significantly less volatile than the Case-Shiller house price index; the Case-Shiller index has dropped by more than 30% since Q4 2006.

Second, the FHFA is lagging the Case-Shiller index by approximately six months. This would imply that the FHFA will also start to rise in the course of upcoming data releases, by approximately 2% qoq.

Correlation of US house indices
X-axis: Case-Shiller, in % qoq
Y-axis: FHFA, in % qoq

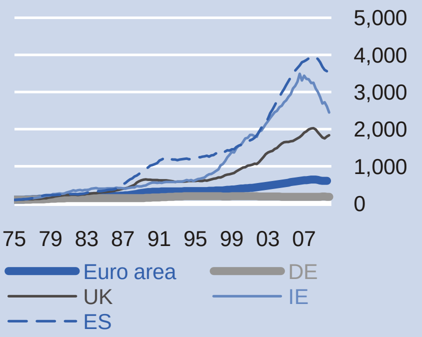


Sources: FHFA, Case/Shiller, DB Research 2

It has been frequently argued that house prices in the euro area follow similar cycles to those in the US, but with a lag of six months to two years – depending on sample periods and data series.[1] Indeed, comparing the long-term development of house prices in the US and house prices in the euro area a remarkable similarity is evident: Since 1970 (nominal) house prices have been rising in both the US and the euro area by roughly 500% until their latest peaks in 2006 and 2007, respectively.

What is more, in both the US and the euro area the house price bubbles have been concentrated in some hot spots: Between 2000 and 2006 house prices in California, Florida and Arizona rose just as strongly as house prices in Europe's most affected housing markets Spain and Ireland.

House prices in Europe
1975=100



Sources: OECD, BulwienGesa, Nationwide, DB Research 3

However, the downward adjustment in many European countries has not been as strong as in the US. The statistical phenomenon that the euro area followed the US in the past therefore suggests that house prices in Europe need to fall further.

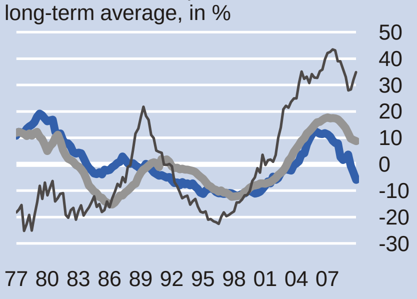
Affordability significantly improved

The financial crisis started because many US citizens could not afford their subprime loans any longer. Affordability issues have obviously been crucial. The simple price-over-income index proved

[1] Cp. Gros, D. (2006). Bubbles in real estate? A longer-term comparative analysis of housing prices in Europe and the US. CEPS Working Document 239. February 2006. Brussels, and Just, T., and S. Ebner (2006). US house prices declining: Is Europe next? Deutsche Bank Research. Current Issues. October 2006.

UK still very expensive

Deviation of house price-income ratio from long-term average, in %



Sources: OCED, DB Research 4

to be a good indicator in the past few years. For both the US and the euro area the indicator crossed the long-term average in 2003 and reached new peaks in 2005 (US) and 2006 (euro area), respectively, with levels 12% to 18% above the long-term average. However, the regional differences were significant, with price-income ratios topping the long-term average by more than 40% in UK, Spain, Ireland, Finland and the Netherlands.

These figures indicate that further price drops are significantly less likely in the US than for many European countries: In the US, the price-income ratio is already below the long-term average and only slightly above the long-term low. In Europe, however, all analysed economies (except the usual outlier, Germany) are still far above their long-term low and in most cases are still above their long-term average.

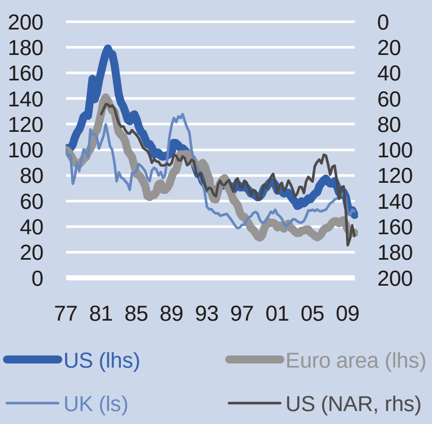
Price-over-income developments in OECD countries

	Peak / (long-term avg.)	Current level / (long-term avg.)	Current level / (long-term low)
US	12.5	-5.9	7.0
Euro area	17.8	8.8	28.3
UK	43.5	34.9	80.3
DE	6.2	-28.6	0.7
FR	31.8	16.5	48.8
ES	44.5	37.0	110.6
IE	74.7	24.3	80.3
IT	21.4	11.9	48.4
NL	48.7	30.6	101.3
SE	33.5	20.0	67.6
NO	38.0	24.2	86.4
FI	50.8	-4.1	31.1

Sources: OECD, DB Research 5

Affordability index down

Mortgage payments over income, 1977=100



Sources: NAR, OECD, DB Research 6

Of course, this simple house price-income indicator is an inaccurate measure of affordability, as it does not capture interest rate movements. As most households are debt-financing their homes to a large degree, lower interest rates can allow for much higher house prices without damaging the purchasing power of a household.

It is therefore useful to calculate mortgage payments over income rather than house prices over income.[2]

Unsurprisingly, this affordability index, representing mortgage payments over income, is significantly below the long-term average in most countries (suggesting a high degree of affordability), given the currently very low interest rates. Of course, we need to be careful putting too much emphasis on this result, as affordability in countries with variable mortgage rate systems may deteriorate quickly when interest rates rise (esp. Spain, Ireland, UK and Sweden).[3]

[2] For the US, the National Association of Realtors calculates a similar index that is matching the development of our index quite nicely. Note, however, that the NAR calculates (qualifying) income over mortgage payments, the index is therefore inverse to ours.

[3] We have suggested a Total Mortgage Payment Index in an earlier study, which takes into account future income and interest rate expectations (cp. Just, T., and S.

Table 7 shows that the affordability index would still be comparatively low, even if we assumed an increase in mortgage rates back to the long-term average (here: the last ten years) or even by 200 bp – all other things remaining constant. Only for UK and the Netherlands would the affordability index rise above the long-term average. These results might seem comforting, but note that this 35-year long-term average for our affordability index contains periods of extremely high interest rates (hence the predominantly negative values of the index). If we cut our long-term average to a somewhat shorter 15-year period, the affordability index could increase significantly (20-30 %) in the next two years above this 15-year average in many European countries. Houses would then be comparatively expensive compared to the 15-year period.

The impact of rising interest rates on affordability

	Current level/long-term average	Plus-100/long-term average*	Plus-200/long-term average**	Reverse to mean/long-term average***
US	-46.5	-35.5	-24.0	-32.7
Euro area	-49.3	-37.3	-25.4	-42.0
UK	-27.0	-12.2	2.1	-21.0
DE	-51.8	-41.9	-32.5	-50.9
FR	-43.1	-27.2	-11.4	-31.9
ES	-39.4	-24.4	-9.3	-33.7
IE	-32.7	-19.0	-5.4	-16.2
IT	-60.9	-52.0	-42.6	-49.6
NL	-2.5	16.0	35.9	-1.5
SE	-34.5	-23.2	-11.4	-28.5
NO	-30.2	-16.0	-2.3	-12.3
FI	-60.2	-50.2	-40.7	-53.6

*) Affordability with interest rates 100 bp higher than today c.p.

**) Affordability with interest rates 200 bp higher than today c.p.

***) Affordability with interest rates back to ten-year average (2000-2009).

Sources: OECD, DB Research 7

Quick regression analysis points to similar results[4]

We have also run a set of linear regression models, in order to back our findings. The main idea of these models is that house prices are primarily driven by income, interest rates and construction costs.

$hp_i = c_i + a_1*(income)_i + a_2*(long\text{-}term\ interest\ rate)_i + a_3*(construction\ cost)_i + e$

Where hp stands for house prices of a country i, c_i is a constant, a_1, a_2, a_3 are estimated coefficients, and e is the error term. Both endogenous and exogenous variables – except interest rates – are calculated as percentage changes. We estimated two models: model 1 is estimated using qoq percentage changes of quarterly

Hunter (2004). UK house prices. End of the rally in sight. Deutsche Bank Research. Current Issues. October 15, 2004.

4 Thanks to Thu-Lan Nguyen for excellent research assistance for this chapter.

Summary of regression analyses

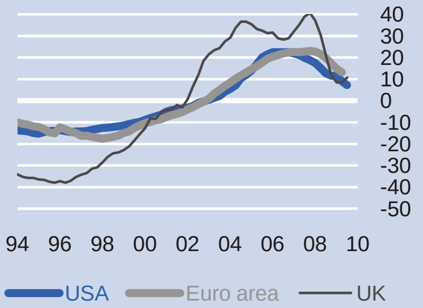
	Model 1	Model 2
DE	-22.1%	-2.5%
FR	26.3%	-5.9%
IE	-16.8%	11.3%
IT	14.7%	15.5%
NL	32.8%	-12.8%
ES	-7.0%	-6.1%
FI	-5.5%	18.9%
NO	8.1%	14.7%
UK	23.4%	8.8%
US	-2.5%	-3.9%
SE	no model	-6.8%

The results show the difference between the estimated and the actual house price levels; i.e. negative values indicate relatively undervalued properties.

Source: DB Research calculations 8

Price-to-rent relation almost back to "normal"

Deviation of price-rent ratio from long-term average, in %



Sources: OECD, DB Research 9

data and model 2 is based on percentage changes of annual data.[5] We ran our models for the period between 1975 and 2002 and used the estimated coefficients to calculate fundamentally justified house price developments to date. The difference between the actual house price today and our model results could be interpreted as current mispricing. Negative values indicate undervalued properties.

Table 8 summarises our results for both model types. The table not only shows a typical finding of empirical economists, i.e. that model results can vary significantly depending on the specific model design. More important are of course the following three main results:

1. Mispricing in (some) European countries is significantly bigger than in the US.
2. The risk of using the “wrong“ model is bigger in Europe than in the US. This would justify an additional risk premium.
3. German houses are likely to be undervalued, while houses in France, Italy, the Netherlands, Norway and UK are likely to be still overvalued.

Price-to-rent ratios still signal sizeable mispricing in Europe

The affordability index is particularly useful in addressing the consumption-good characteristic of housing. But housing is not only a consumer durable, it is at the same time an investment good. It is therefore useful to look at the price-to-rent ratio. As the price of an asset is nothing but the discounted sum of its future incomes, an increase of the price-to-rent ratio indicates the expectation of higher future rents. If the indicator deviates significantly from its long-term average, this can be read as either a structural break or a sign of a bubble.

Price-rent ratios in OECD countries

	Current level / (15-year avg.)	**Current level / (35-year avg.)**	**Current level / (long-term low)**
US	7.3	11.5	26.5
Euro area	13.2	16.3	37.3
UK	10.8	33.4	102.7
DE	-13.1	-27.7	0.0
FR	26.6	35.6	77.2
ES	20.2	12.9	45.5
IE	22.3	83.5	395.0
IT	12.9	12.9	45.5
NL	15.7	39.1	125.3
SE	54.6	67.6	161.2
NO	34.6	57.1	152.0
FI	24.4	43.0	115.3

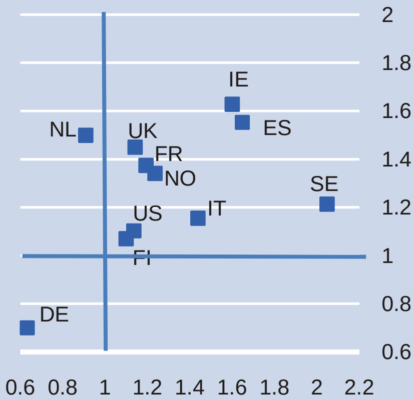
Sources: OECD, DB Research 10

5 We also ran pooled regressions which did not yield more convincing results than the single-country models, even after correcting for fixed country effects.

Indeed the price-to-rent ratio increased in (almost) all OECD countries between the late 1990s and 2006. With prices falling in most countries and rents remaining comparatively stable, this ratio has almost fallen back to its 15-year average – in the US a bit more than in the euro area.

However, it is necessary to differentiate between developments in the euro area, as the euro area indicator has a strong downward bias due to the big weight of Germany in the indicator. In most euro area countries the price-to-rent ratio is still more than 20% above the 15-year average and significantly above our longer-term average (35 years) or compared to the long-term lows.[6]

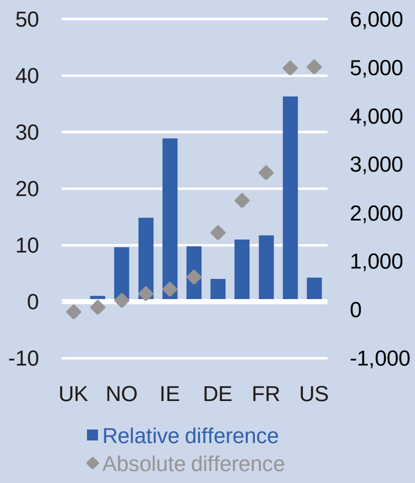
Double bubble
X-axis: Completion boom (1)
Y-axis: Pricing boom (2)



(1) Completion boom indicator: Number of completions (2003-2007) relative to number of completions (1998-2002)
(2) Pricing bubble indicator: House price/income ratio; long-term average=1

Sources: Euroconstruct, OECD, DB Research 11

Strong supply growth
Absolute difference in '000 units, rhs
Relative difference in %, lhs



Absolute difference = Cumulated number of completions minus number of new households between 1997 and 2009
Relative difference = Absolute difference in relation to number of households in 2009

Sources: Euroconstruct, OECD, DB Research 12

Supply-side risks

The indicators analysed so far put more emphasis on the demand side of the housing markets. In economic text books, supply of new housing units is a lagged function of demand, i.e. an increase in demand translates, with some delay, into additional housing completions, until the market is back at a new equilibrium. However, this adjustment process is far from perfect in real life: Strict planning regimes may lead to shortages in supply and speculative project developers can build for future rather than current demand and build up transitory vacancies.

In our OECD country sample we find a strong rise in construction activity during the boom years: In the five years from 2003-2007 the number of housing completions in Spain and Ireland for example was approximately 60% above the completion level in the five-year period from 1998-2002, in IT the increase amounted to roughly 40%, in Sweden the number of completions even doubled. Only in Germany and the Netherlands the completion volume fell in the years 2003-2007 compared to the previous five-year period. Germany is an outlier thanks to the strong construction activity in the post-unification years that resulted in a severe adjustment process in the decade after 1995. In all other countries of our sample, the number of completed housing units increased only moderately by 10-20%.

Chart 11 shows that the house price movements on European housing markets have resulted in very strong increases of construction activity, particularly in Sweden, Ireland, Spain and Italy. In that sense, we have had a double bubble – one on the respective housing market (housing stock) and one on the construction markets (flow market).

Of course, we need to qualify these results, as an increase in construction activity might only mirror rising demand in case of growing incomes or favourable demographics. We use the difference of (absolute) growth of the housing stock and (absolute) growth of the number of households as an indicator for excess supply. A positive value of this indicator can be interpreted as growing oversupply.[7] In a second step, we put this indicator in relation to the current number of households, in order to control for

[6] We do not want to put too much emphasis on the deviation from the 35-year average and the long-term low, as numerous distortions have been at work in the past 35 years; e.g. changing public engagement on housing markets like changes of declining-balance depreciation rules, rent caps or social housing investments.
[7] This is only an indication; we cannot directly compute the number of relevant price-driving vacancies for two reasons: First, we implicitly assume that the housing market has been in equilibrium in 1997, which we do not know for sure. Second, in case of strong interior migration (e.g. from rural to urban regions) this indicator can be highly positive without producing oversupply.

country size effects – an oversupply of 5 million homes in the US leads to significantly less disruptions than similar excess supply in Spain.

This relative measure reveals that the biggest supply-side problems remain on the Spanish, Irish and the Finnish housing markets (chart 12). In UK and Sweden the increase in housing units matched pretty much the additional demand. What might be even more astonishing is that despite the significant drop in residential construction in Germany, this development largely reflects the country's unfavourable demographics: Not only has growth of completions come down, but growth in the number of households also fell.

Additional risks outside the country sample

We have looked at a very broad set of indicators for a large sample of OECD housing markets. Not all indicators were pointing in the same direction. But one general conclusion is straightforward: The risk of further house price falls is much bigger in some European countries, especially in Spain, Ireland and the Netherlands, but also in Italy, France, and to a somewhat lesser extent in the UK, than in the US. It is important, however, to note that these factors cannot capture additional institutional risk elements: For example, the volume of subprime mortgage approvals has been rising significantly in the US in the course of the last 12 months (from USD 10 bn in 2008 to USD 423 bn in 2009) on the back of the stabilisation measures introduced by the Obama administration.[8] This of course can create new problems should the financial situation for low-income households fail to improve over the next few months.

Overview of housing market indicators

	Price/ income ratio	Mortgage/ income ratio	Fundamental regression model	Price/rent ratio	Excess supply risk
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Euro area	slightly elevated	cheap	no model	elevated	medium risk
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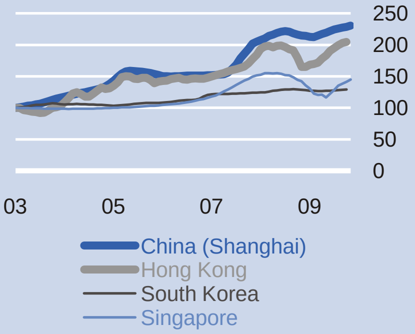
IE	elevated	cheap	fair	elevated	high risk
IT	elevated	cheap	elevated	elevated	medium risk
NL	elevated	elevated	elevated	elevated	medium risk
SE	elevated	cheap	slightly cheap	elevated	low risk
NO	elevated	cheap	mixed results	elevated	medium risk
FI	fair	cheap	slightly cheap	elevated	medium risk

Source: DB Research 13

Germany remains the outlier. Germany is the only country in our sample, for which no indicator points to overvaluation. There was no bubble or supply boom. This does not leave the German housing

[8] Cp. Dobridge, Christine, Peter Hooper and Torsten Slok. DB Global Markets Research (2010). US Housing Outlook: Bumping along bottom for another year. Global Economic Perspectives. February 17, 2010.

Money into Asian property
House price index, 2003=100



Source: Data collected by Global Property Guide **14**

market without risk, but these risks are structural rather than cyclical by nature.

Even though many housing markets have corrected strongly in the last 24 months, it seems we have not yet touched bottom everywhere. This is worrisome especially as risks rise on the Asian housing markets. House prices in Shanghai and Hong Kong have already topped the pre-crisis levels, those in Singapore are close to the previous peak.

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Printed by: HST Offsetdruck Schadt & Tetzlaff GbR, Dieburg

ISSN Print: 1612-314X / ISSN Internet and e-mail: 1612-3158