ARTICLES

HOUSE PRICE DEVELOPMENTS IN THE EURO AREA AND THE UNITED STATES

Understanding the pattern and nature of house price dynamics is an important element in assessing the macroeconomic situation and outlook, especially at the current juncture, as the bursting of the housing bubbles in a number of euro area countries and the United States has been a key contributing factor to the current global financial crisis. When and the extent to which house prices will recover, in some cases from still negative real rates of growth, will depend on both developments in the housing sector itself and a number of factors that drive the business cycle. This article analyses the house price cycle in the euro area, its interlinkages with the business cycle and its alignment with developments in income, rents and credit. It also compares developments in house prices and their underlying factors with those in the US economy, and investigates the heterogeneity across countries in the euro area and regions in the United States. The main conclusions are that the starting point of the recovery in house prices in the euro area was not as weak as it will be in the United States, and that developments in house prices are currently more heterogeneous across the countries of the euro area than they are across the regional areas of the United States.

1 INTRODUCTION

Monitoring and assessing house price developments is important for monetary policy and financial stability because of the strong impact that they can have on aggregate expenditure on the one hand and on private sector balance sheets on the other. This applies during times of normal cyclical developments, and becomes particularly relevant when the emergence and subsequent bursting of house price bubbles inflicts high economic costs (see Box 1 for a synopsis of the key macroeconomic consequences of house price developments). The past few years have highlighted the importance of assessing house price dynamics, as they have played a key role in the current financial crisis and the associated economic downturn. This applies both to some euro area countries and the United States.

The dynamics of the most recent house price cycle have been pronounced on both sides of the Atlantic. Taking the euro area as a whole, nominal house prices registered an annual growth rate of almost -4% in mid-2009. Data for recent quarters, however, suggest that the declines have bottomed out, with a positive annual growth rate of more than 2% in early 2011. In the United States, house prices are still falling, down by more than 4% in the year to the second quarter of 2011. The pace of the decline had temporarily become less pronounced, but accelerated again after the expiration of the first-time homebuyer tax credit in 2010.

The picture for the euro area conceals substantial differences across its member countries. For instance, in Ireland, Spain and the Netherlands, nominal house price growth rates are still in negative territory, while in Belgium, Finland and France, they have clearly found their way back into positive territory. In other countries, such as Germany and Italy, the cyclical evolution has been more muted, with house price growth in Germany having never really turned negative. By contrast, in the United States, the pattern of house price growth over the past few years has been more similar across its regions, with all regions witnessing a strong downward adjustment and still posting negative growth rates in the first half of 2011.

Against this background, Section 2 of this article reviews some stylised facts on the euro area and US house price cycles, which help to put the latest developments into perspective. This type of analysis can usefully complement assessments of the housing market situation based on a detailed analysis of different supply and demand factors.[1] Section 3 assesses the value of house

1 See the article entitled "Assessing house price developments in the euro area", *Monthly Bulletin*, ECB, February 2006; and the box entitled "Recent housing market developments in the euro area", *Monthly Bulletin*, ECB, December 2010.

prices against benchmark developments in income, rents and fundamental demand-side variables. Finally, Section 4 analyses the heterogeneity in house price developments across the euro area countries and the regions in the United States.

Box 1

THE MACROECONOMIC IMPACT OF HOUSE PRICE DEVELOPMENTS

There is abundant empirical evidence that house price growth leads developments in real economic activity and that it may also play a causal role.[1] There is also evidence that GDP cycles associated with the bursting of house price bubbles are characterised by deeper economic downturns.[2] The potentially very destabilising effects of sharp fluctuations in the housing sector can operate through a consumption channel and a financial stability channel.

The housing market can affect consumption in different ways. A direct channel relates, for instance, to the labour-intensive nature of the construction industry, with labour demand and household income influencing consumption. A more indirect channel relates to the impact that movements in house prices have on wealth. Residential property is the main source of collateral for many households and it can be used to obtain credit to boost consumption. A rise in residential property prices facilitates such borrowing and can potentially cause spillover effects in terms of higher consumption. Several studies[3] suggest that housing wealth has a significant positive effect on consumption, particularly in the United Kingdom, the United States, Australia and Canada. However, there is far less evidence in the literature that it has such an effect in the euro area.

The housing market also affects real economic activity through a financial stability channel. For instance, if a decline in house prices coincides with a deterioration in credit conditions and households' ability to service their mortgages, credit institutions will incur greater losses. If such losses then cause solvency problems for these institutions, financial stability could be at risk. However, credit institutions do not actually need to be experiencing solvency problems for financial stability to be at risk. If their investors perceive there to be greater uncertainty over their investments, they may withdraw their funding, which would cause funding problems for the credit institutions and in turn result in a constrained liquidity situation.

The build-up of house price imbalances themselves can be related to very different factors, the main one being ample liquidity as a result of easy access to low-cost credit. At the start of a house price cycle, greater affordability and a more pronounced appetite for risk may bolster demand for housing, boost demand for credit and ultimately push up house prices. Credit institutions may use the higher collateral values to provide better credit conditions and may also adjust their balance sheets, marking to market the collateralised assets, which would enable them to lend more. This fosters house price dynamics and potentially causes house prices to deviate, in some cases substantially and for a protracted period of time, from their fundamental dynamics.

1 For more details on the links between credit, house prices and recessions, see, for instance, Agnello, L. and Schuknecht, L., "Booms and busts in housing markets: determinants and implications", *Working Paper Series*, No 1071, ECB, July 2009.
2 See Reinhart, C.M. and Rogoff, K.S., "This Time is Different: A Panoramic View of Eight Centuries of Financial Crises", *NBER Working Paper*, No 13882, April 2008.
3 See Altissimo, F., Georgiou, E., Sastre, T., Sterne, G., Stocker, M., Valderrama, M.T., Weth, M., Whelan, K. and Willman, A., "Wealth and asset price effects on economic activity", *Occasional Paper Series*, No 29, ECB, June 2005.

Economic policies such as taxation and financial market regulation may also play a role in the building-up of imbalances. Housing, especially if owner-occupied or held through arrangements such as real estate investment trusts (REITs), is frequently tax-favoured in comparison with other investments. The specifics vary across countries, but typically homeowners' capital gains and imputed rents are not taxed at the full rate and mortgage interest payments are sometimes tax deductible. Favourable tax treatment is likely to amplify the residential property cycle, as there appears to be some country-specific evidence of a correlation between the size of the housing boom and the generosity of the tax treatment of housing.[4]

4 See Dam, N.A., Hvolbøl, T.S., Pedersen, E.H., Sørensen, P.B. and Thamsborg, S.H., "Developments in the Market for Owner Occupied Housing in Recent Years – Can House Prices be Explained?", *Monetary Review*, Danmarks Nationalbank, first quarter 2011; and van den Noord, P.J., "Tax Incentives and House Price Volatility in the Euro Area: Theory and Evidence", *OECD Economics Department Working Paper*, No 356, 2003.

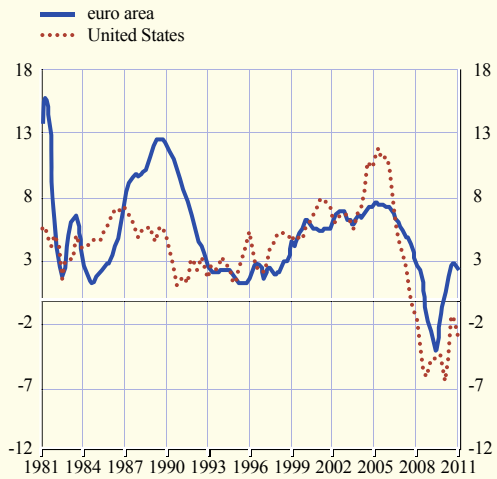
2 PAST HOUSE PRICE DYNAMICS IN THE EURO AREA AND THE UNITED STATES

Looking back over the past three decades, annual house price growth in both the euro area and the United States has troughed three times: at the beginning of the 1980s, at the beginning of the 1990s and more recently at the end of the 2000s (see Charts 1 and 2, and Box 2 for a detailed discussion of the statistical features of the house price indices in the euro area and the United States). The troughs mark two broad cycles that to a large extent coincided across the two economic areas.

The trough in house price growth at the end of the 2000s was different from the previous two in that it was characterised by declines in nominal prices, with prices only falling in real terms in the earlier troughs. When assessing

Chart 1 Nominal house prices in the euro area and the United States

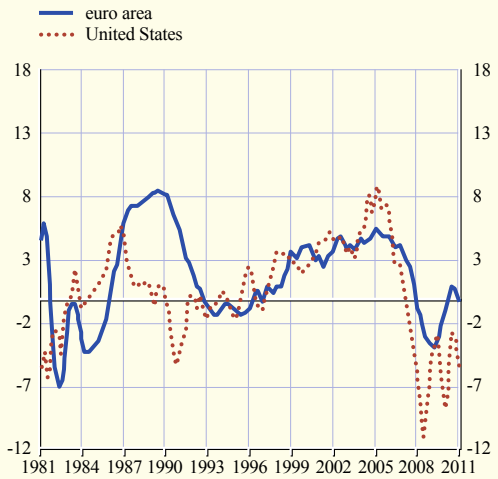
(year-on-year changes)



Sources: Federal Housing Finance Agency, bank lending survey for the euro area, ECB, Eurostat, national statistical offices and ECB calculations.

Chart 2 Real house prices in the euro area and the United States

(year-on-year changes)



Sources: Federal Housing Finance Agency, bank lending survey for the euro area, ECB, Eurostat, national statistical offices and ECB calculations.
Note: Real house price indices are computed by dividing nominal house price indices by the respective consumer price indices.

Statistics on the 1990s and 2000s real house price cycles in the euro area and the United States

	Euro area		United States	
	1990s	2000s	1990s	2000s
Full cycle period: *(trough to trough)*	Q4 1985-Q1 1996	Q1 1996-Q1 2010	Q2 1984-Q2 1995	Q2 1995--[1]
Duration: *number of quarters*				
Trough-peak	28	47	24	47
Peak-trough	13	11	23	-[1]
Cumulated change: *percentages*				
Increase: trough-peak	42.4	46.8	12.2	52.7
Decrease: peak-trough	-2.9	-6.0	-6.1	-22.1[2]
Average annual growth rate: *percentages*				
Trough-peak	5.6	3.3	2.0	3.7
Peak-trough	-0.8	-1.5	-1.1	-5.1[2]
Trough-peak-trough	3.5	2.3	0.5	1.5[2]
Maximum year-on-year growth rate: *percentages*	8.7	5.5	5.9	8.9[2]
Violence (speed): *average percentage per quarter*				
Increase phase	1.5	1.0	0.5	1.1
Decrease phase	-0.2	-0.5	-0.3	-1.3[2]

Sources: Federal Housing Finance Agency, ECB, OECD, national statistical offices and ECB calculations.
Notes: Price indices have been deflated with the respective consumer price indices. A trough (peak) is dated as the quarter that marks the end of a prolonged period of declining (increasing) real house prices.
1) No trough had been registered in the United States by the first quarter of 2011.
2) Based on data up to the first quarter of 2011.

the depth of the trough at the end of the 2000s, the height of the peak in growth and the cumulative increase in real house prices in the run-up to the peak need to be taken into account. In both economic areas, the 2000s cycle was clearly more pronounced than the 1990s cycle in terms of the duration of the expansion – almost 12 years from trough to peak compared with six to seven years in the 1990s cycle (see the table). In the United States, the 2000s cycle was also more pronounced than the 1990s cycle in terms of the much stronger cumulative increase (and subsequent decrease) in real house prices. This contrasts with the euro area, where the cumulative changes were more comparable across the two cycles. The ratio between the cumulative increase in house prices and the duration of the expansion is sometimes called the "violence" or the speed of a cycle. This measure suggests that, in the United States, the most recent cycle has been more pronounced than the previous one, whereas in the euro area there have been more similarities between the two.

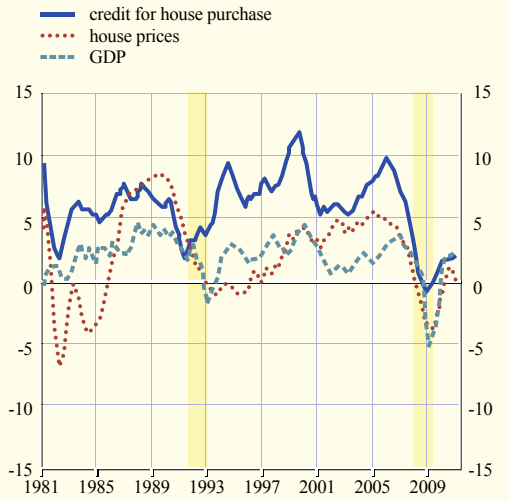
Over the past three decades, the year-on-year increase in real house prices has been, on average, 2% in the euro area and 0.7% in the United States. Structural features related to the supply of housing and the availability of land may have contributed to the differential between these average growth rates, as the euro area is generally more densely populated than the United States.[2] Moreover, the transition to the single currency in the euro area and the associated downward adjustment of interest rates in many of its member countries may also have played a role.

Comparing the pattern of growth in house prices with that of growth in real GDP and in credit for house purchase confirms that the house price cycle is aligned with the broad business cycle. For example, the recession in the early 1990s and at the end of the 2000s broadly coincided with periods of negative growth in real house prices, both in the euro area and the United States (see Charts 3 and 4). By contrast, there is less alignment over shorter growth cycles that are ultimately not associated with outright recessions. For instance, the sharp economic slowdown observed in the early 2000s after the bursting of the high-tech bubble saw no

2 Overall, there was much less land per capita available in the euro area (roughly 0.008 km^2 per capita) than in the United States (roughly 0.032 km^2 per capita) in 2010.

Chart 3 House prices, credit for house purchase and economic activity in the euro area (in real terms)

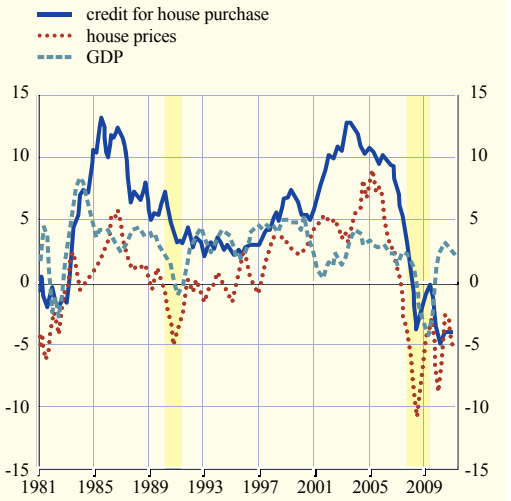
(year-on-year changes)



Sources: ECB, Eurostat and ECB calculations.
Note: The areas shaded in yellow denote recession periods, as defined by the CEPR Dating Committee.

Chart 4 House prices, credit for house purchase and economic activity in the United States (in real terms)

(year-on-year changes)



Sources: Federal Reserve Economic Data, Federal Housing Finance Agency, Haver, Federal Reserve Board and ECB calculations.
Note: The areas shaded in yellow refer to recession periods, as defined by the National Bureau of Economic Research.

matching downward adjustment in house prices. At that time, house prices were supported by a sustained period of low interest rates and financial innovations,[3] which improved the borrowing opportunities of many households.

Overall, these interlinkages provide for a coincidence of broader credit cycles, house price cycles and business cycles, not only within economies, but also across economies. The latter has become evident in the latest house price cycle, with the combination of low-cost financing and financial globalisation providing for a high degree of synchronisation in credit cycles and asset price cycles across economies. When gauging the prospects for a recovery in house price growth in the euro area at the current juncture, it is particularly important to take into account not only developments in the real economy and housing markets themselves, but also conditions in financial markets and credit markets, as well as the need for balance sheet repairs.

3 For a discussion on financial innovations in the euro area and the United States, see, for example, the box entitled "A comparison of MFI loans as a source of household financing in the euro area, the United Kingdom and the United States", *Monthly Bulletin*, ECB, July 2008.

Box 2

STATISTICAL FEATURES OF HOUSE PRICE INDICES IN THE EURO AREA AND THE UNITED STATES

This box describes the statistical features of residential property price indicators and house price indices for the euro area and the United States respectively. Owing to statistical differences in the euro area residential property price indicators, caution is required when comparing changes in residential property prices, both within the euro area and between the euro area and the United States.

US house price indices

The main text of this article analyses changes in the prices of residential properties in the United States by referring to the house price index compiled by the Federal Housing and Finance Agency (FHFA). Another widely used index is the Standard & Poor's (S&P)/Case Shiller house price index. Both indices are compiled for the United States as a whole, as well as for geographical breakdowns. They reflect changes over time in the prices of single-family houses by applying a "repeat-sales" method. Repeat-sales indices derive changes in prices over time by comparing the resale price (or, alternatively, revaluation) of an existing house with its first sale price. While the S&P/Case Shiller index covers 20 major metropolitan areas, the FHFA index takes into account the entire country. The transaction prices and appraisals used for the FHFA index are those that are related to mortgages provided by Fannie Mae (Federal National Mortgage Association) and Freddie Mac (Federal Home Loan Mortgage Corporation).

Residential property price indicators for the euro area

With regard to the euro area, the ECB's analyses have so far been based on a set of residential property price indicators that are compiled by the Eurosystem. Each euro area NCB identified from the existing residential property price indicators those that it considered to best reflect changes over time in the transaction prices of houses and flats in the whole country. However, the available indicators are not always based on transaction prices, as, in some cases, they make use of appraisals. Moreover, some indicators cover mainly or exclusively metropolitan areas, while several refer only to existing houses and flats. The treatment of changes over time in housing characteristics differs across countries. For example, in some cases, houses and flats are stratified according to type, in order to limit the impact that the heterogeneity in samples of dwellings over time may have on observed price changes. Another approach extracts quality differences in dwellings by estimating the impact of their age, number of bedrooms, etc. on the total price. Most residential property price indicators in the euro area countries are reported at a quarterly frequency. For the euro area as a whole, the ECB compiles a quarterly time series dating back to 1980. Back calculations of country data refer primarily to the period before mid-1990 and make use of other sources that are less representative than those used for the compilation of recent price changes.

In December 2010 Eurostat started to publish a new set of experimental house price indices for euro area countries. It has also announced that the regular compilation and publication of residential property price indices for all EU countries will begin in 2012. Before then, however, some improvements are required in terms of the regions and dwelling type that they cover, as well as in terms of their timeliness.

Overall, the lack of harmonisation in the statistical approaches used for compiling residential property price indicators for the euro area also has to be considered carefully when making comparisons across euro area countries. By contrast, FHFA house price indices at the level of US states are fully comparable in statistical terms.

3 ASSESSING THE VALUE OF HOUSE PRICES IN THE CURRENT CYCLE

In the same way as with other asset prices, it is difficult to determine the equilibrium value of house prices. A straightforward approach is to draw on ratios that directly relate house prices to key reference series.[4] Two ratios are commonly used in this respect. The first is the house price-to-income ratio, which captures the idea that house prices in the longer term are constrained by the affordability of housing for households, including the ability to service the debt incurred for the house purchase from the stream of income. The second is the house price-to-rent ratio, which captures the relation in the longer term between the cost of owning a house and the return on renting it out.[5]

Charts 5 and 6 show, for the euro area and the United States respectively, the percentage deviations of these ratios from their long-run averages over the past three decades. The long-run average reflects the notion that the growth relation between numerator and denominator of the ratios should develop in a certain way in the longer term. However, it is well understood, and also visible in the charts, that this can imply protracted periods of a positive or negative deviation of the actual ratios from the average.

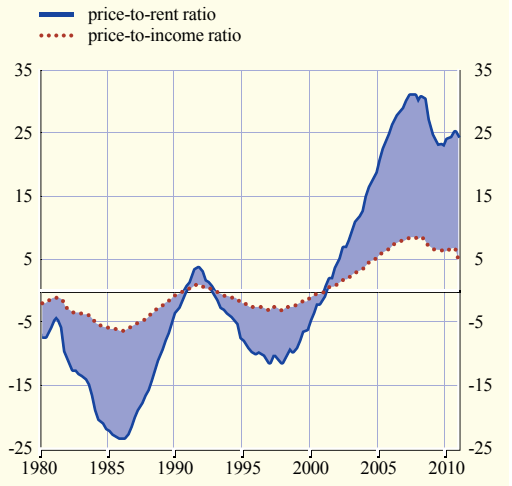
Bearing this in mind, Charts 5 and 6 convey a number of messages. First, in both the euro area and the United States, relative to the previous cycle, there was substantial growth in house prices in the run-up to the latest peak. Second, compared with income and rents, house prices were relatively contained up until 2002-03, both in the United States and the euro area.

4 Another approach is to apply structural models that account for supply and demand factors, and use the deviations from the equilibrium levels owing to these factors as an indication of a misalignment. Such models typically include a standard set of fundamental factors, such as household income, financing costs and demographic factors. In general, estimation exercises have demonstrated that the role of these factors depends on the geographical market under analysis. Moreover, the fundamental factors may themselves be subject to misalignments and may evolve during certain periods in a non-sustainable manner.

5 Actual rent can be used as a proxy for the flow of fundamental returns in a dividend-discount framework. See Poterba, J.M., "Tax Subsidies to Owner-Occupied Housing: An Asset-Market Approach", *Quarterly Journal of Economics*, Vol. 99, No 4, pp. 729-752, November 1984; and Campbell, J.Y. and Shiller, R.J., "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors", *Review of Financial Studies*, Vol. 1, No 3, pp. 195-228, 1988.

Chart 5 Euro area deviation ranges for house price valuations

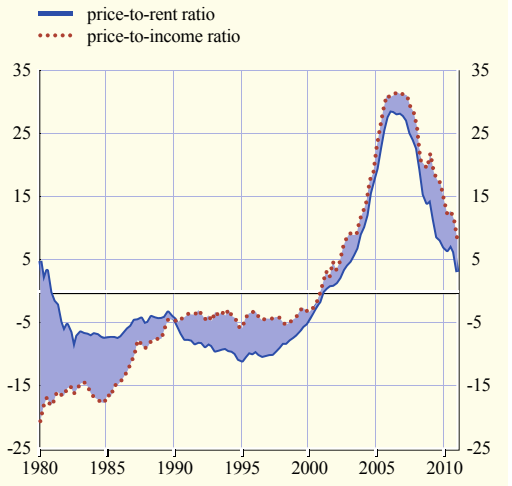
(percentage deviation from long-run average)



Sources: ECB, Eurostat and ECB calculations.

Chart 6 US deviation ranges for house price valuations

(percentage deviation from long-run average)



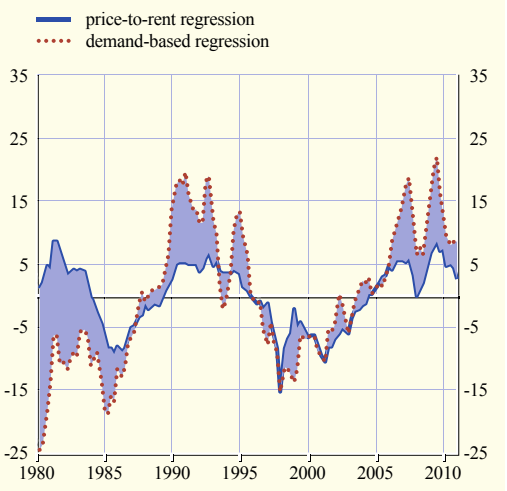
Sources: Federal Reserve Economic Data, Federal Housing and Finance Agency, Haver and ECB calculations.

Third, the downward adjustment in the current cycle has been steeper and stronger in the United States than in the euro area. Fourth, at the current juncture the two measures still point to a positive misalignment of house prices from their fundamentals, both in the euro area and the United States. Fifth, over the full sample, the band width denoted by the two ratios is much wider for the euro area than for the United States. One reason why the house price-to-rent ratio differs so much between the two economic areas could be that rental prices in some euro area countries are less flexible and less responsive to market forces, and therefore the impact of house price developments on the ratio is much more pronounced. The degrees of misalignment highlighted by a comparison of the two ratios with their longer-term averages to some extent depend on the time period over which this average is computed. Looking beyond this caveat, the degrees of misalignment seen at the end of the period suggest that the necessary adjustment may be a drag on the recovery in house price growth.

Comparing the ratios of house prices to income or rents with their constant longer-term averages has its limitations if the equilibrium ratio reflecting sustainable trends in house prices and their reference series varies over time. For instance, there may have been an increase in the equilibrium ratio in the euro area countries in the run-up to monetary union, which entailed, among other things, a substantial decline in (real and nominal) interest rates in many countries. Consequently, the inclusion of an interest rate variable may help to take account of such a structural shift. For the purposes of comparison, Chart 7 reports similar information to that in Chart 5, but this time the ratios are calculated using model-based methodologies that reflect fundamental demand-side variables.[6] There are several interesting outcomes of the comparison that are worth noting. First, the valuation ranges revolve around a zero line and suggest two clear periods of positive misalignment, namely in the early 1990s and the current house price cycles. Second, the valuation ranges are smaller compared with those in Chart 5, in particular during the current cycle. Third, the regression-based misalignment measures point to less overvaluation in recent years than those reported in Chart 5, but there is still some degree of misalignment in residential property prices. Overall, the messages conveyed by these methodologies are broadly similar to those derived from the mechanical indicators in Chart 5, but the valuation ranges are smaller in size and, with regard to the euro area, show that the degree of overvaluation was as high in the early 1990s as it has been in recent years.

Chart 7 Euro area model-based deviation ranges for house price valuations

(percentage deviation)



Sources: ECB, Eurostat and ECB calculations.
Note: The ranges include two types of residual: i) a residual derived from a price-to-rent ratio regressed on a constant and a real long-term interest rate; and ii) a residual derived from regressing house prices on real GDP per capita, population and a real long-term interest rate.

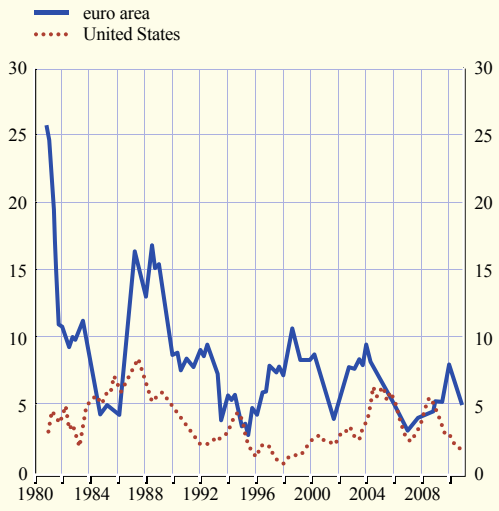
4 CROSS-COUNTRY AND CROSS-REGIONAL HETEROGENEITY

Aggregate measures of house prices may mask important differences across countries in

6 Two types of model have been employed: i) a price-to-rent ratio regressed on a real long-term interest rate; and ii) house prices regressed on real GDP per capita, population and a real long-term interest rate. These models are explained in more detail in the box entitled "Tools for detecting a possible misalignment of residential property prices from fundamentals", *Financial Stability Review*, ECB, June 2011.

Chart 8 Dispersion index for the euro area and the United States

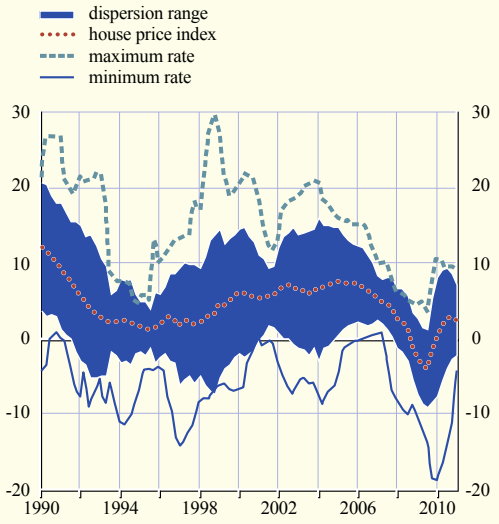
(calculated as the standard deviation of year-on-year nominal house price growth across countries/regions)



Sources: Federal Housing Finance Agency, ECB, OECD, national statistical offices and ECB calculations.

Chart 9 Euro area house price index, dispersion range, and maximum and minimum year-on-year house price growth rates across countries

(year-on-year changes)



Sources: ECB, national statistical offices and ECB calculations.
Notes: The shaded area shows the degree of dispersion (+/- 1 standard deviation) in the year-on-year growth rates around the aggregate house price series. It is worth noting that the aggregate house price series is constructed using the GDP weights of each country, while the standard deviation is unweighted.

the euro area or regions in the United States. Understanding such differences is of interest from a more structural point of view in order to assess the degree of integration of housing markets, as well as the underlying factors that affect developments therein. It is also of high relevance for analysing monetary policy and financial stability, as a high level of dispersion may be indicative of imbalances, even in a situation where, at the aggregate level, data seem to signal a healthy macroeconomic environment.

Making use of available data on house prices in ten countries in the euro area and across nine regions in the United States,[7] a dispersion index has been constructed for the euro area and the United States (see Chart 8).[8] The heterogeneity is also shown in Charts 9 and 10: for each quarter, the maximum and minimum year-on-year growth rates of house prices in the countries or regions are shown together with the one standard deviation band around the economy-wide growth rate of house prices.

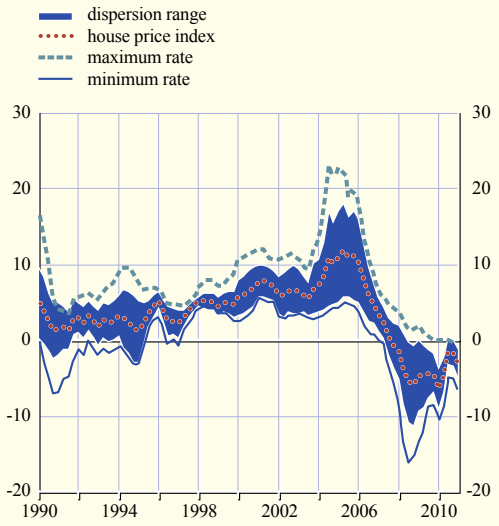
With regard to the euro area, the level of dispersion across countries has been trending downwards and has actually become less volatile over the last decade. In fact, it has almost halved between the 1990s cycle and the 2000s cycle as a result of the synchronisation of business cycles. Furthermore, the level of dispersion in the euro area tends to be lower around the trough of the house price cycles, owing mainly to rapid

7 For the euro area, only those countries for which a longer time series was available were considered, namely Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal and Spain. For the United States, the house price database of the Federal Housing Finance Agency usefully groups 50 states into nine census divisions or regions. These are New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain and Pacific.

8 The dispersion index is calculated as the standard deviation of the year-on-year growth rates across countries/regions for each quarter, with a higher value indicating that the growth rates across countries/regions exhibit wider differences. For data reasons (in particular the lack of sufficiently long time series for inflation data for all the US regions), the analysis on dispersion in this section is based on nominal house price data. However, ECB calculations show that using real data does not change the overall picture.

Chart 10 US house price index, dispersion range, and maximum and minimum year-on-year house price growth rates across regions

(year-on-year changes)



Sources: Federal Housing Finance Agency and ECB calculations.
Notes: The shaded area shows the degree of dispersion (+/- 1 standard deviation) in the year-on-year growth rates around the aggregate house price series. It is worth noting that the aggregate house price series is constructed using the housing stock shares as weights for each census division or region, while the standard deviation is unweighted.

declines in the rates of growth in house prices in a number of countries.

By comparison, despite the growing convergence in the euro area over the last few decades, the level of dispersion in the United States appears historically to have been lower and less volatile, as well as less idiosyncratic across the regions.[9] Having belonged to a political and monetary union for a long time, the US states have naturally fostered similar institutional arrangements and economic integration over time. Moreover, financial integration deepened after the savings and loan crisis of the 1980s, with a shift towards nationwide funding of housing activity that was supported by fewer restrictions on interstate lending and by Government Sponsored Enterprises (GSEs), which pooled and securitised mortgages. Consequently, mortgage lending, and thus to some extent local house prices, became less dependent on local banks and financial conditions, which may have contributed considerably to reducing house price disparities across states.[10] By contrast, in the euro area, structural indicators for its retail banking environment, such as measures of the cross-border activity of banks, suggest that its mortgage markets and housing markets are still somewhat fragmented across countries. This is due to several legal, regulatory, infrastructure and information-related barriers.[11]

A number of other factors also seem to contribute to the differences in the levels of dispersion between the two economic areas. Within the euro area, the transition to the single currency was for many countries associated with profound downward adjustments in interest rates and thus a higher affordability of mortgage credit, which subsequently seems to have given rise to different assessments and expectations regarding the sustainability of house price developments. The effect on the level of dispersion may also have been amplified by differences in tax regimes for house-buying and financing, as countries that grant high tax subsidies for owner-occupied housing tend to see greater variability in house prices.[12] Within the United States, geographical specificities, such as the density of the cities and the proximity of a number of regions to the coast, may be a key explanation for the increase in the level of dispersion, especially during periods of rising house prices.

9 The difference in the level of dispersion could also be due in part to statistical differences in the measurement of house prices, or even dependent on the local features and weight of the big cities where most data are collected. A higher level of dispersion across countries may conceal the extent of the dispersion in house prices at the city level, where a large part of the population lives. Evidence seems to suggest that there is less dispersion in house prices in the cities of the four largest euro area countries than in those in the United States. See Hiebert, P. and Roma, M., "Relative house price dynamics across euro area and US cities: convergence or divergence", *Working Paper Series*, No 1206, ECB, June 2010.

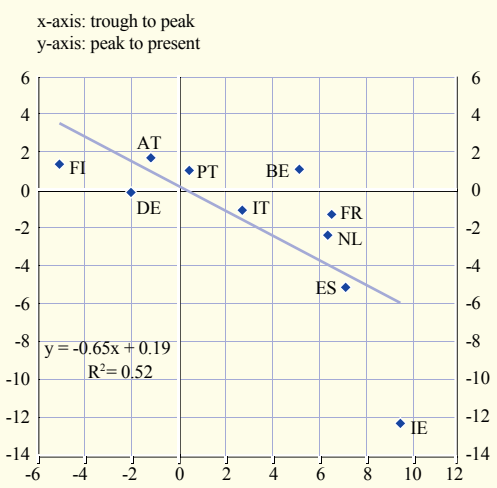
10 For further information on the impact that closer financial integration in the United States has had on improving house price convergence across states, see Schnure, C., "Boom-bust cycles in housing: the changing role of financial structure", *IMF Working Paper*, No 05/200, October 2005.

11 For more details on this topic, see *Financial integration in Europe*, ECB, May 2011.

12 See van den Noord, P.J., "Tax Incentives and House Price Volatility in the Euro Area: Theory and Evidence", *OECD Economics Department Working Paper*, No 356, 2003.

Chart 11 Average real house price growth in the 2000s cycle in selected euro area countries

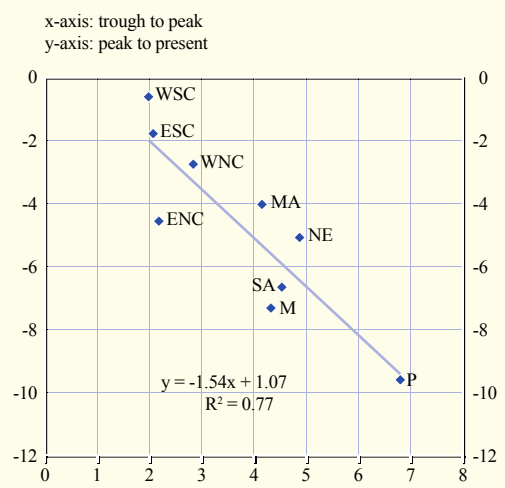
(average year-on-year growth rates)



Sources: ECB, national statistical offices and ECB calculations.
Note: The chart compares, for the current house price cycle in the euro area, the increase in house prices from trough to peak with the adjustment thereafter.

Chart 12 Average real house price growth in the 2000s cycle in selected regions of the United States

(average year-on-year growth rates)



Sources: Federal Housing Finance Agency and ECB calculations.
Notes: The chart compares, for the current house price cycle in the United States, the increase in house prices from trough to peak with the adjustment thereafter. ENC: East North Central, ESC: East South Central, M: Mountain, MA: Middle Atlantic, NE: New England, P: Pacific, SA: South Atlantic, WNC: West North Central and WSC: West South Central.

Turning to the latest developments in the current house price cycle, the level of dispersion generally increased in the run-up to and around its peak, but has recently been trending downwards, in both the euro area and the United States. The rise in house prices across the US regions was more broadly based than in previous cycles and was fuelled by easy access to credit and the securitisation of loans, which led to house prices in many regions being significantly overvalued. In fact, those regions that exhibited high house price growth registered substantial declines in house prices in the aftermath of the recession, which contributed to the drying-up of liquidity in financial markets and hampered the trading of mortgage-backed securities. The correlation between average house price increases from trough to peak and the subsequent declines in the current house price cycle is stronger across the US regions than in the euro area (see Charts 11 and 12).[13] Moreover, in the United States, all regions are still registering negative house price growth, but in the euro area, a number of countries are recording moderately positive growth rates, despite the high growth rates observed in some regions before the peak.

5 CONCLUSIONS

This article reviews the current developments in house prices in the euro area and the United States, against the background of historical experience and in comparison with key reference series, such as income and rents. In both economic areas, the latest house price cycle has been very pronounced in terms of its

13 According to Abel, J.R. and Deitz, R., "Bypassing the bust: the stability of upstate New York's housing markets during the recession", *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, March 2010, the proliferation of sub-prime mortgages is characteristic of the current housing cycle in the United States. Not only have sub-prime lending and house price appreciation gone hand in hand, but also more significant declines in house prices have been associated with those areas that have had a higher proliferation of such sub-prime loans. The resultant build-up of vacant houses may continue to depress house prices in most regions in the United States in the short term.

long duration, its cumulative excessive growth and the degree of subsequent correction, both in nominal and real terms.

At the same time, the data suggest that the latest house price cycle has been more unique in the United States than in the euro area in comparison with the cycle that ended in the mid-1990s. This holds true for the cumulative increase in real house prices, both at the peak and trough of the cycle. Furthermore, there has been a greater degree of similarity in pattern of house price growth across the US regions than there has been across the different countries of the euro area.

The current position of the house price cycle continues to be surrounded by considerable uncertainty. In early 2011 house prices in the United States were still declining in annual terms, whereas in the euro area, house prices now appear to have bottomed out in the majority of countries. A number of indicators suggest that there is still some degree of misalignment in both economic areas at the current juncture. This implies that some downward adjustment in real house prices is still to be expected in both areas in the coming years. In the United States, this is likely to be an economy-wide development, while in the euro area, this may be confined to some countries.

Overall, the article highlights the important cyclical linkages between the housing market and the rest of the economy, as well as the protracted adjustment processes that are needed after house price bubbles have burst.