Articles
The state of the house price cycle in the euro area

This article discusses the current state of the euro area house price cycle and compares it with historical patterns. It finds that the recovery in house prices in the euro area has been rather muted thus far and appears to be weaker than the typical increase observed historically during the initial phase of an upturn in the house price cycle. At the same time, corrections of previous overvaluations, together with favourable income and financing conditions, suggest that the current recovery has a better chance of being sustained than the short-lived upturn observed relatively soon after the crisis. A gradual and sustained recovery in the house price cycle would support economic developments. At the same time, the accompanying credit dynamics have thus far remained muted, limiting the build-up of systemic risks to the euro area financial system. The new macroprudential toolkit is also helping to mitigate possible risks in a targeted and granular way.

1   Introduction

House prices have been a key indicator in assessing the state of the euro area economy since the financial crisis. This reflects the general importance that the housing sector tends to have for the timing and amplitude of the business cycle and, in particular, its specific importance in the aftermath of a boom-bust episode. In a number of euro area countries, house prices had increased at unsustainable rates and to unsustainable levels prior to the crisis, and the inevitable adjustments had subsequently led to declines in house prices or muted developments at best.

After some ups and downs during a protracted period of adjustment, there are now increasing signs that house prices in the euro area are finally on the rise again. Measured in terms of the annual rate of change in residential property prices, the cycle reached a low point in early 2013 before the rates of change became successively less negative and moved into positive territory in the second half of 2014. This recovery does not appear to have been very strong thus far, but the upward path of the growth rate is relatively broad-based across euro area countries. Against this background, it is instructive to analyse the various factors underlying the nascent recovery in house prices, as well as its strength and sustainability going forward.

Understanding the state and nature of the house price cycle is important from both a macroeconomic and financial stability point of view. This is because it is linked to the business and financial cycles, with house prices affecting credit markets, as they determine the value of collateral that households can borrow and banks can lend against. Tellingly, the collateral channel had shown its importance in the context

of the financial crisis and the banking sector problems that emerged in its aftermath in some euro area countries. Going forward, house price developments deserve particular scrutiny in a low interest rate environment given the complex links between residential property prices, economic activity and credit dynamics.

This article discusses the recent developments in, and current outlook for, house prices across the euro area, focusing on price developments in residential real estate and abstracting from those in commercial real estate (Section 2). It then compares the ongoing house price and credit cycles with previous ones (Section 3), before elaborating on the interaction between house price developments, the real economy and the banking sector (Section 4).

2 Recent developments and current outlook for house prices

Recent developments in euro area residential property prices suggest that the corner has been turned and a recovery is underway. The annual rate of change in house prices started to increase in mid-2013, turning mildly positive in the second half of 2014. There were similar signs in 2009-10, relatively soon after the financial crisis, but the recovery could not be sustained, given the unfolding of the euro area sovereign debt crisis. In this context, it is instructive to assess the sustainability of the nascent, but still subdued, recovery for the euro area as a whole by looking at the different factors underpinning it.

Chart 1

Euro area residential property prices by groups of countries

(year-on-year percentage changes and percentage point contributions)
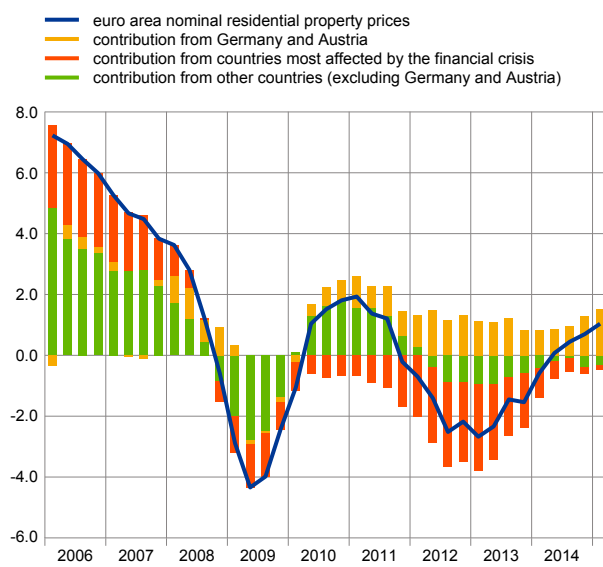
Sources: ECB calculations based on national data.
Note: The countries most affected by the financial crisis are Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia. Last observations were for Q1 2015 for all countries except Belgium, Slovakia and Finland, where the last observation was for Q4 2014.
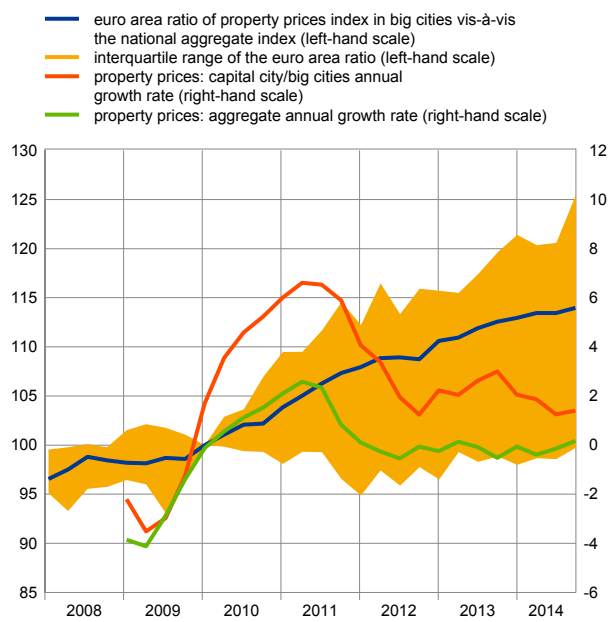
First, the recovery in euro area house prices appears to be relatively broad-based across groups of countries. With contributions to euro area house price growth from Germany and Austria remaining solidly positive, the upturn in the annual growth rate since early 2013 essentially reflects a gradual easing of the negative contributions from the countries most affected by the financial crisis (Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia). To a somewhat lesser extent, this also holds for the group of other euro area countries (excluding Germany and Austria) (see Chart 1). These broad-based contributions towards positive euro area house price growth differ from those in the upturn of 2009-10, when the countries most affected by the financial crisis continued to contribute negatively and the upturn mainly reflected a strong rebound in house price growth in the other countries.

Second, the current recovery in euro area house price growth seems less contingent on prices in metropolitan areas than in 2009-10. Aggregating selected countries for which data are available shows

that house prices in metropolitan areas have been growing faster since the financial crisis than in the economy as a whole (see Chart 2). There may be geographical reasons for this, such as less availability of land and a correspondingly lower elasticity of housing supply in metropolitan areas than rural areas. However, this may also imply that house price dynamics in metropolitan areas could pick up faster in response to the economic cycle and then provide false signals if the latter is not sustained. In recent quarters the growth rate differential between growth in metropolitan and economy-wide house prices has remained relatively stable, while the upturn in house prices observed in 2009-10 was characterised by a much stronger acceleration in metropolitan areas than elsewhere, which subsequently also unwound much faster. As with the individual countries, house price dynamics in the euro area as a whole also seem to have been more balanced recently in terms of location, thus providing a better starting point for a sustained recovery than a few years ago.

Third, the current recovery is taking place in an environment where earlier imbalances in house prices have resulted in substantial corrections. In several countries, in particular those most affected by the financial crisis, large rises in house prices in the run-up to 2007 were followed by falls in the 2007-13 period, i.e. preceding the current upturn. This suggests some correction of the imbalances that had built up in the pre-crisis period, when a number of countries saw very strong growth in house prices – double-digit in some cases (see Chart 3). It also explains why house prices are currently rising again at a faster pace in some of these countries, such as Ireland and Spain, in an environment of improving macroeconomic and favourable financing conditions. Countries which have experienced relatively strong house price growth since 2007, especially recently (such as Germany and Austria), are the ones that saw more moderate growth in the period up to 2007 and did not require a correction thereafter. The notion of a correction of imbalances also comes through when looking at developments in house prices as a ratio to income (measured in terms of GDP). Countries which had the largest increases in this ratio in the period up to 2007 by and large also saw the smallest increases or biggest declines in the period 2007-13 (see Chart 4). In some countries, such as Spain, Ireland and Greece, the declines were even larger than the previous increases.

Measuring the degree of house price imbalances and the corresponding need for corrections is surrounded by considerable uncertainty. This reflects the complex interaction between the housing, rental and mortgage markets, different structural characteristics between these markets across countries, as well as data

Chart 3

House price growth in the run-up to, and unwinding of, the financial crisis

(average annual percentage changes; x-axis: 2007-2013, y-axis: 2001-2007)
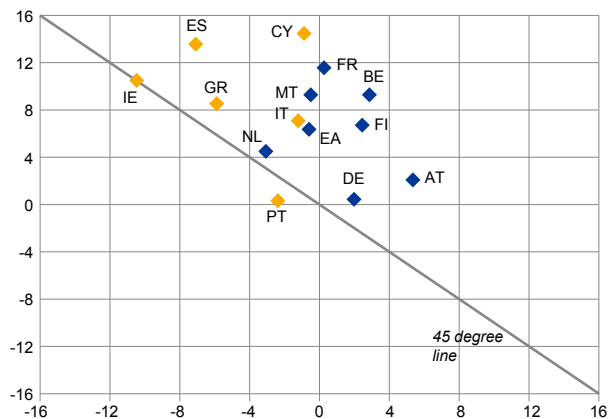
Source: ECB calculations based on national data.
Notes: The countries most affected by the financial crisis are Ireland, Greece, Spain, Italy, Cyprus and Portugal which are shown with a yellow dot. Data for Estonia, Latvia, Lithuania, Luxembourg, Slovenia and Slovakia are not available for the full sample. For Cyprus, the pre-crisis average is computed for the period 2002-07.

Chart 4

House price-to-GDP ratios in the run-up to, and unwinding of, the financial crisis

(average annual percentage changes; x-axis:2007-2013, y-axis: 2001-2007)
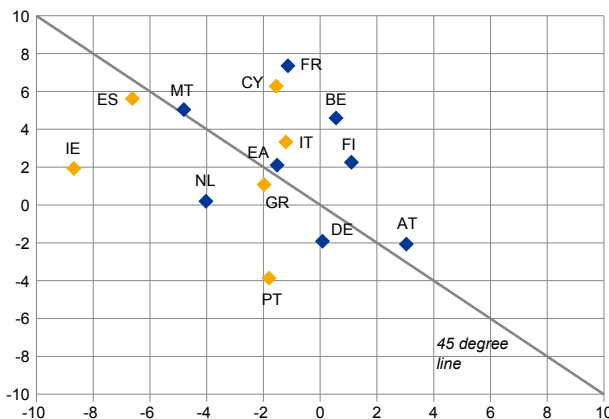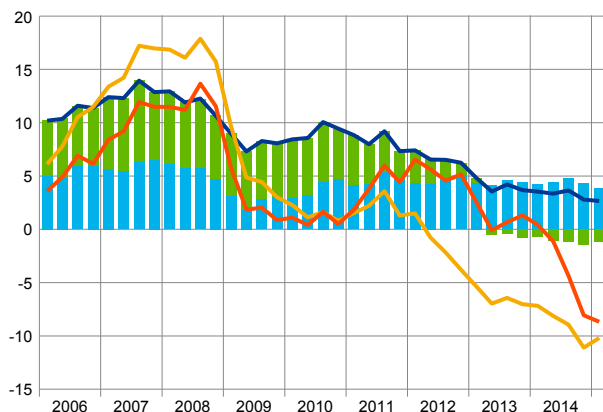

Sources: Eurostat and ECB calculations.
Notes: See Chart 3.

Chart 5

Euro area house price-to-income ratios

(percentage point deviations from long-term average and percentage point contributions)

— house price-to-income ratio (basic)
— ratio adjusted using annuity formula
— ratio adjusted using quadratic formula for interest rate
— contribution from countries most affected by the financial crisis
— contribution from other countries

Sources: Eurostat, ECB and ECB calculations.
Notes: The long-term average is computed over the period since Q1 1996. Disposable income per household is used as the proxy for income. The interest rate is the average mortgage interest rate. Footnote 2 in the main text explains the adjustment methods. The countries most affected by the financial crisis are Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia and their contribution to the euro area ratio is shown in green.

constraints and measurement issues.[1] The house price-to-income ratio is one of the available valuation indicators and represents a crude measure of housing affordability. When the indicator lies above its long-term average, house prices may be seen as overvalued – at least from the perspective of prospective new buyers – which should lead to downward pressures on prices. Since 2010 the imbalance in the house price-to-income ratio for the euro area as a whole has progressively unwound. In 2014 it was only around 3% above its fundamental level, suggesting that house prices were broadly back in line with fundamentals. This reflects in particular the unwinding in the group of countries most affected by the financial crisis, which between 2007 and 2010 had seen relatively little adjustment (see Chart 5). Considering that the affordability of housing and house prices are also determined by the costs of servicing mortgage debt, the basic house price-to-income indicator can be augmented with interest rates, either by an annuity-based or a regression-based approach.[2] These augmented affordability measures suggest that

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[1] For a discussion, see the box entitled "Statistical valuation metrics for residential property markets", *Financial Stability Review*, ECB, May 2015.

[2] The annuity-based measure augments the house price-to-income ratio as follows: $r/(1-(1+r)^{-T})*$ (house price index)/(income index) where T is the mortgage length and r is the nominal mortgage interest rate. Typically, a mortgage length of 20 years and a fixed mortgage interest rate are assumed. The degree of over/undervaluation is then calculated as the deviation in percentage terms of the augmented ratio from its long-term average. Alternatively, house prices can be regressed on income and mortgage interest rates and the residuals are taken as the valuation estimates.

average house prices may currently even be moderately below historically normal valuation levels. However, the boost to housing affordability coming from the current low interest rate environment may not be fully sustainable if interest rates were to normalise further out.

Besides starting from a more balanced position than in 2009-10, there are also other factors supporting a more sustained recovery in house prices. One is related to the improving income and employment prospects for households that are associated with the ongoing economic recovery, which should boost demand for housing and lead to stronger house price growth. European Commission survey figures indicate that households' intentions to purchase a house in the next two years have shown some signs of improvement since the end of 2012, but are still below the longer-term average since 1999. This is likely to continue, since expectations for economic growth one and two years ahead are currently higher than in 2009-10 and there is a prospect of financing conditions remaining favourable in an environment where non-standard monetary policy measures have been designed to keep interest rates low for some time to come.

Bank lending rates and credit standards have become increasingly favourable in recent quarters. This clearly works as a second supporting factor: since the end of the last recession in early 2013 the improvement in financing conditions and the upturn in the house price cycle have coincided. Notwithstanding some heterogeneity across countries, lending rates in the euro area for loans for house purchase declined by more than 90 basis points from that point (see Chart 6), while credit standards became successively less tight and eventually eased over the same period (see Chart 7). Improving housing market prospects have been an important element in the easing of credit standards, suggesting that a sustained improvement

Chart 6

Mortgage lending rates in the euro area and selected countries

(percentages)

euro area, Germany, France, Italy, Spain, Netherlands, Belgium, Austria, recessions
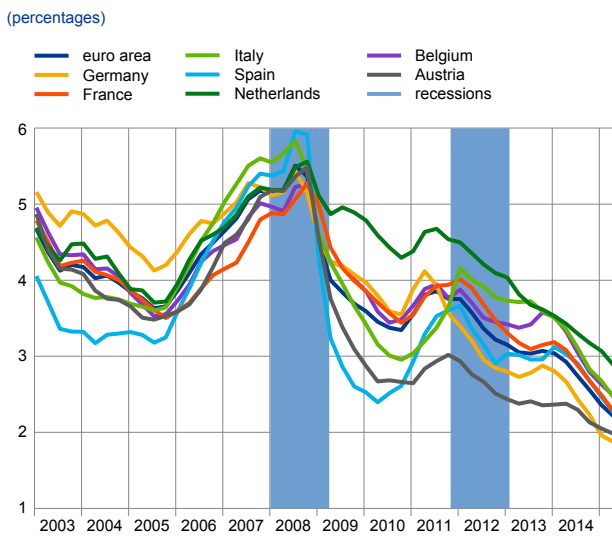
Source: ECB.
Notes: Shaded areas delimit recessions as identified by the CEPR Euro Area Business Cycle Dating Committee. The rates refer to the composite lending rate for house purchases across different periods of interest rate fixation, weighted with a 24-month moving average of new business volumes. The most recent observations are for Q2 2015.

Chart 7

Credit standards for loans for house purchases and housing market prospects

(net percentages; a higher value indicates tightening)

housing market prospects, credit standards, recessions
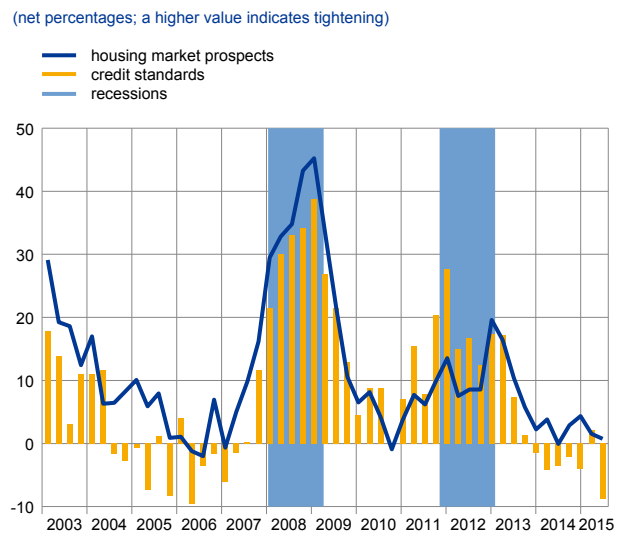
Source: ECB euro area bank lending survey.
Notes: Shaded areas delimit recessions as identified by the CEPR Euro Area Business Cycle Dating Committee. Backward-looking three months. Weighted net percentages are obtained as tightened minus eased. The most recent observations are for Q3 2015.

in housing market prospects due to factors other than credit standards could be reinforced if the latter were to be relaxed further. The chances of these other factors that determine credit standards remaining favourable are good, because the tightening of credit standards in 2011-12 was initially more a result of the unfolding sovereign debt crisis – through the impact of the increasing cost of funds and balance sheet constraints triggered by the crisis – than of housing market prospects becoming less favourable.

The prevailing low interest rate environment could also further sustain housing demand and stimulate house prices from an investment portfolio perspective. Housing can be viewed not only as a consumption good, but also as an investment good, the return on which can be assessed and compared with alternative investments. In the current prevailing low interest rate environment, housing could become comparatively more appealing as an investment for households and/or investors if it promises higher expected returns compared with, for example, bank deposits, securities such as government bonds, or equity investments. Estimates of the return on residential housing are only available for selected euro area countries (Germany, Austria, the Netherlands and France) and are surrounded by considerable uncertainty.[3] Broad as such a comparison naturally is, it indicates that annual returns on residential housing in these countries have generally been higher in recent years (such as 2011 and 2014) than the prevailing nominal long-term yields on government bonds, nominal yields on bank deposits and the dividend yield of the corresponding national equity markets, and that these differentials widened further between 2011 and 2014 (see Chart 8). Overall, the relative return on housing in recent years compares favourably with 2008, when returns on housing were lower than deposit yields and government bond yields.

Chart 8

Returns on housing investment relative to those of alternative assets

(percentage points)
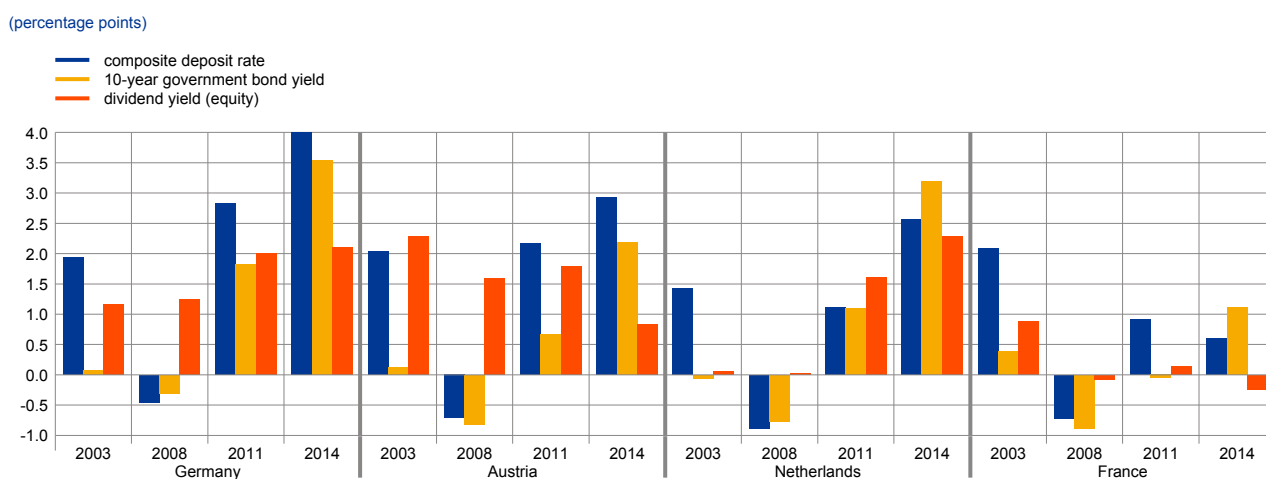
Sources: IPD, DataStream and ECB calculations.
Notes: The income return on residential housing is the net annual income receivable as a percentage of the capital employed. The composite deposit rate is the MFI interest rate on deposits from households with agreed maturity (total original maturity, new business coverage).

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[3]   The estimates of income return are from the IPD Quarterly Research Database and reflect residential property portfolios for institutional investors. These portfolios are likely to invest predominantly in the prime or close-to-prime market, a sector which is likely to have a different dynamic to the entire residential market. In addition, alternative asset classes are characterised by a different level of risk and a corresponding risk premium, and the total return of each asset class is ultimately determined by the stream of income obtained (in terms of rents, dividends and interest payments) plus the appreciation/depreciation of the underlying asset, which is not explicitly considered in this analysis.

3   Stylised facts of house price cycles in the euro area

Assessing the current state of the house price cycle and the prospects for a further recovery draws on comparisons with historical patterns. In particular, it is informative to analyse how cycles in euro area house prices have evolved in relation to both the business and credit cycles, as the states of these cycles can condition each other. The analysis looks at the corresponding variables – house prices, GDP and MFI loans to households – in real terms in order to account for differences in average inflation rates over the past few decades.

The real house price cycle is broadly aligned with both the business and credit cycles. This alignment is summarised in the overall strong degree of co-movement between the real house price cycle and the business and credit cycles respectively (see Chart 9). The maximum correlation between annual real house price growth and annual real GDP growth is about 60%, while that between annual real house price growth and annual real household loan growth is about 70%. In both cases, it is found at broadly coincident level. The alignment is particularly apparent during recessions (see Chart 10). All euro area recessions since 1980 have been accompanied by decreasing, and eventually negative, real house price growth, which started to recover only after the trough in real economic activity had been passed. In turn, periods of negative real house price growth are typically preceded by a strong deceleration in real loans, although the growth rate for the latter has rarely turned negative. Unlike in the run-up to recessions, real loan growth does not appear to lead the house price cycle in the recovery phases after a recession. Against this background, the expected recovery in real GDP growth in the coming quarters and the recent mild upturn in the household credit cycle support the view that the real house price cycle is likely to continue to recover at moderate levels in the short to medium term.

Chart 9

Cross-correlations of real GDP growth and real household loan growth with respect to real house price growth

(percentages)
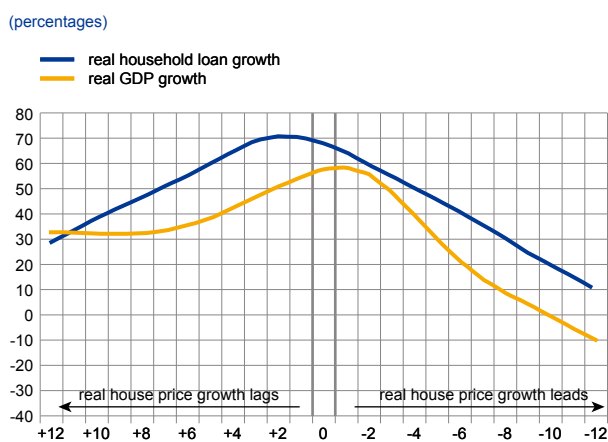
Sources: Eurostat, ECB and ECB calculations.
Notes: Correlations between annual growth rates of real house price growth (deflated by the HICP) with, respectively, real GDP annual growth rates and real MFI loans to household annual growth rates (deflated by the HICP), using data from Q1 1980 to Q1 2015.

Chart 10

Euro area real GDP, real house prices and real loans to households

(year-on-year percentage changes)
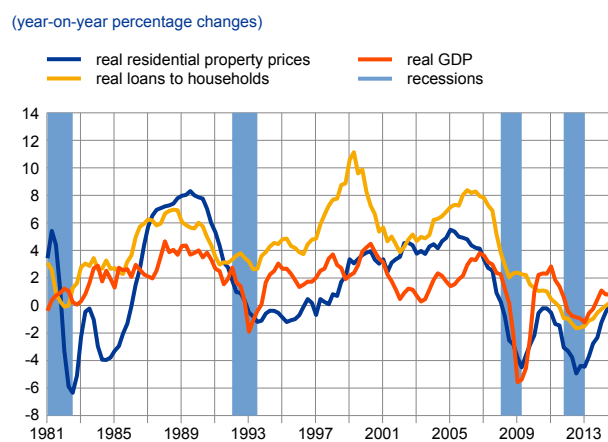
Sources: Eurostat and ECB.
Notes: Real house prices and real MFI loans to households obtained by deflating the respective nominal index with HICP. Shaded areas delimit recessions as identified by the CEPR Euro Area Business Cycle Dating Committee. The most recent observations are for Q1 2015.

Upturns in the house price cycle are, on average, stronger and longer-lasting than downturns. Looking at ten euro area countries from the first quarter of 1970 to the fourth quarter of 2014 (a sample dictated by the availability of the data), 37 major real house price increases and 43 major real house price decreases can be identified.[4] On average, major upturns see real house prices grow by around 50% over a period of about five years, while major downturns are characterised by a smaller amplitude and shorter duration, decreasing by about 16% on average over a period of around three years. A subset of these major episodes includes outright boom-bust instances, which may last longer. Developments during major upturns and downturns can be used to derive benchmark paths against which to assess the latest downturns and upturns in euro area real house prices.

The fall in euro area real house prices after 2007 was broadly in line with historical patterns. This assessment can be gleaned by comparing developments in real house prices in the euro area and in selected countries around the most recent peak in euro area aggregate real house prices with a benchmark downturn path (see Chart 11). This benchmark path is derived on the basis of the aforementioned historical episodes, depicted by interquartile ranges of historical increases and decreases (i.e. abstracting from the extreme developments found in the upper and lower quartiles). The comparison points to significant country heterogeneity in post-peak house price developments. The decline was much more marked in countries which had also seen a much stronger house price boom preceding the peak (such as Spain) than in those which experienced more stable house prices both before and after the peak (such as Germany). As regards the credit cycle, real household loans

**Chart 11**

Real house prices around the 2007 peak

(indices, normalised to 100 at T=peak, with T=Q3 2007 for the euro area and euro area countries shown)

- euro area
- Germany
- France
- Italy
- Spain
- Netherlands
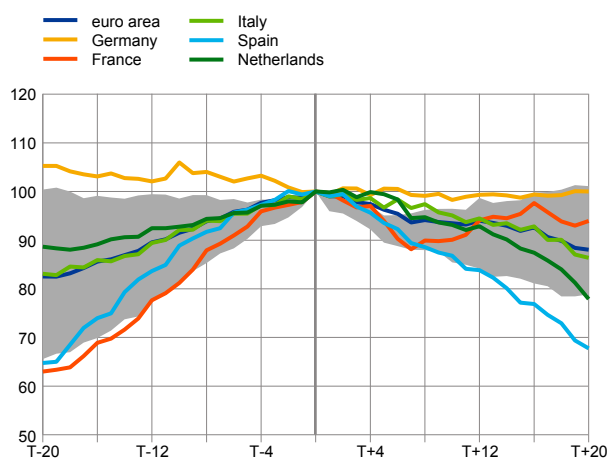
Sources: BIS, ECB, national sources and ECB calculations.
Notes: Grey area delimits interquartile range of developments around peaks for the sample considered (Q1 1970-Q4 2014).

Chart 12

Real MFI loans to households around the 2007 peak

(indices, normalised to 100 at T=peak, with T=Q3 2007 for the euro area and euro area countries shown)

- euro area
- Germany
- France
- Italy
- Spain
- Netherlands
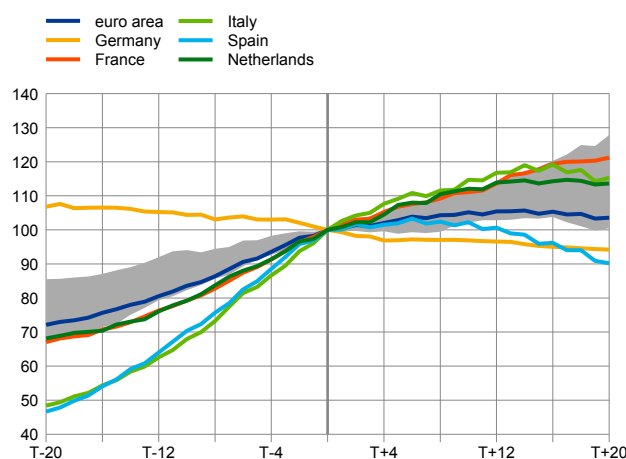
Sources: BIS, ECB, national sources and ECB calculations.
Notes: Grey area delimits interquartile range of developments in real household loans around peaks of real house prices for the sample considered (Q1 1970-Q4 2014).

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[4]   Identification of "major" house price cycles follows Claessens et al.: "What happens during recessions, crunches and busts?", *Economic Policy*, Vol. 24, 2009, pp. 653-700. A quarterly version of the Bry-Boschan algorithm identifies local maxima (peaks) and minima (troughs) for peak-to-peak and trough-to-trough cycles that last at least five quarters and phases that last at least two quarters. Episodes of ongoing cyclical increases and decreases in real house prices, as well as those which lasted less than a year and those in the lower quartile (i.e. episodes characterised by minor changes) are excluded.

tend to stabilise or even increase for several quarters after the cycle for real house price peaks (see Chart 12). Marked heterogeneity also characterises the pattern of real household loan cycles by country along the latest euro area real house price peak. Overall, the fact that the latest downturn in euro area real house prices appears to be broadly in line with historical declines may lead to an expectation that the subsequent recovery is also likely to be in line with upturns in recent decades.

However, the current euro area real house price upturn has been somewhat weaker than the typical increase observed historically during the initial phase of the upturn. This also appears to be the case for most euro area countries (see Chart 13). Indeed, since the latest euro area trough in 2013, only some countries (such as Germany) have seen an upturn in real house prices, while in others (such as Spain and the Netherlands) there has only been a broad stabilisation followed by a mild increase in prices, or even a further decline (as in France and Italy). These different patterns reflect several factors, including the heterogeneous current state of the business cycle across countries and country-specific policy measures affecting housing and mortgage markets. As regards the credit cycle, real household loans appear to increase markedly both before and after real house price increases start (see Chart 14). As with recent real house price increases, the latest real household loan increases also appear to be weaker than during typical real house price upturns. This is also the case for most euro area countries. Thus, the most recent household loan developments only seem to have heralded, so far, relatively moderate increase in real house prices in the short to medium run.

Chart 13
Real house prices around the 2013 trough

(indices, normalised to 100 at T=trough, with T=Q4 2013 for the euro area and euro area countries shown)
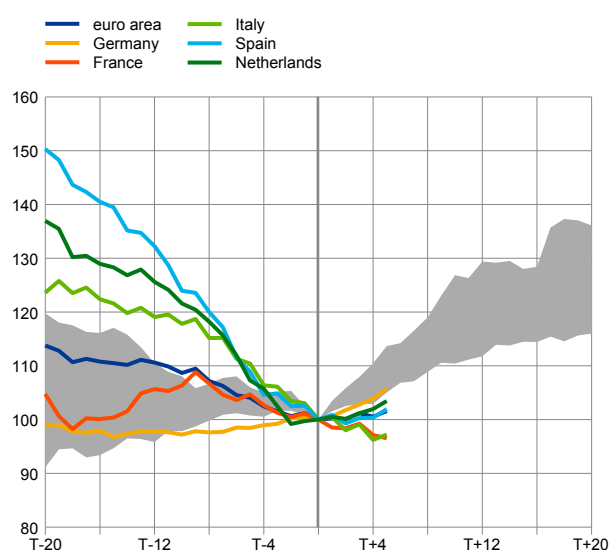
Sources: BIS, ECB, national sources and ECB calculations.
Notes: Grey area delimits interquartile range of developments in real house prices around troughs for the sample considered (Q1 1970-Q4 2014).

Chart 14
Real MFI loans to households around the 2013 trough

(indices, normalised to 100 at T=trough, with T=Q4 2013 for the euro area and euro area countries shown)
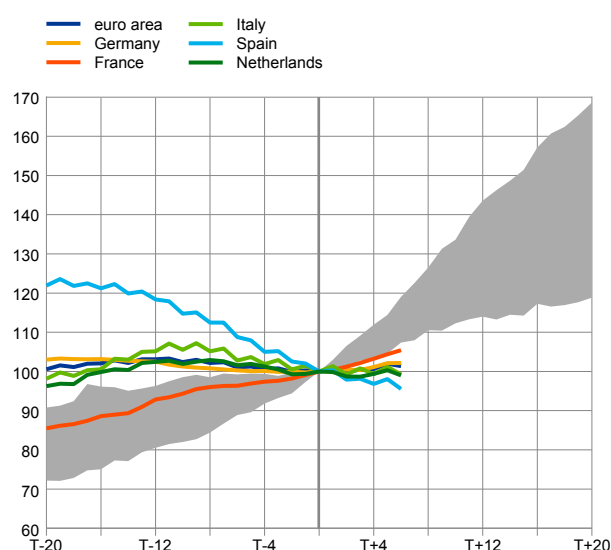
Sources: BIS, ECB, national sources and ECB calculations.
Notes: Grey area delimits interquartile range of developments in real household loans around troughs of real house prices for the sample considered (Q1 1970-Q4 2014).

Overall, the downward adjustment of euro area real house prices after 2007 and their recent recovery are in line with historical cyclical patterns. At the same time, this recovery seems to have been somewhat weaker than normal, which may be related to a relatively weaker credit cycle at the current juncture. The euro area house price and credit cycles also remain characterised by heterogeneity across countries. Such heterogeneity in the timing and strength of cyclical patterns may also reflect differences in structural features of housing and mortgage markets across countries (see Box 1).

Box 1
House price cycles and structural features of housing markets

Differences in the cyclical development of house prices across countries may reflect differences in structural characteristics. Such characteristics, or changes therein, can dampen or amplify the impact on house prices of variations in housing supply and demand conditions over the business cycle. This box discusses selected structural features that are of importance for housing markets in the euro area.

Empirical studies point to different categories of structural features that correlate with the variability of the house price cycle.[5] The most prominent categories relate to parameters set by the fiscal and financial frameworks and to those that govern the responsiveness of housing supply to demand shocks. However, it is difficult to assess the precise impact of these parameters, as it typically depends on the combination of structural characteristics in place.

Examples of structural characteristics in the fiscal framework mainly include housing-related taxes and subsidies. For instance, everything else being equal, higher transaction taxes for buying property should dampen housing market activity and thereby also the house price cycle, but may be doing so less in the case of higher tax deductibility of the interest on the mortgage liability that typically comes with a property purchase. In around half the euro area countries, mortgage interest payments are eligible for some degree of tax deductibility, and recurrent property taxes are levied in almost all euro area countries.[6] Property transaction taxes are charged in most countries, although there are some exceptions, such as Estonia, Slovakia and Lithuania. Changes to the fiscal treatment of housing have occurred in a number of countries in the most recent period, including Spain, Ireland, Portugal, Finland, Luxembourg, the Netherlands, Italy, Greece and Portugal, all of which increased property tax rates or restricted the degree of mortgage interest tax deductibility.

Examples of mortgage market characteristics relate to the general conditions under which loans for house purchase are taken up and granted. For instance, higher loan-to-value and loan-to-income ratios typically make house prices more sensitive to the business and credit cycles,

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[5] European Commission, "House price imbalances and structural features of housing markets", *Quarterly Report on the Euro Area*, Vol. 10, Issue 3, October 2011; and Tsatsaronis, K. and Zhu, H., "What Drives Housing Price Dynamics: Cross-Country Evidence", *Quarterly Review*, Bank for International Settlements, March 2004.

[6] "Tax Reforms in EU Member States 2014. Tax Policy Challenges for Economic Growth and Fiscal Sustainability", *European Economy*, European Commission, Vol. 6, 2014; and "Possible Reforms of Real Estate Taxation: Criteria for Successful Policies", *European Economy*, European Commission, Occasional Papers, No 119, October 2012.

as households are less constrained by credit and income when purchasing houses. Acknowledging the various measurement problems associated with a typical loan-to-value ratio, data collected before the crisis show that relatively high ratios used to be observed in the Netherlands and France, whereas they were on the lower side in Italy and Germany.[7] Also, the possibility of mortgage equity withdrawal may in general magnify the response of house prices to increased housing demand in a boom, as it tends to make housing investment even more attractive owing to its collateral services when house prices are anticipated to rise. However, in contrast to the United States, this possibility did not appear to be widespread in euro area countries in the past.

Examples of the structural characteristics of housing supply responsiveness relate mainly to zoning regulations and building approval processes. For instance, housing supply may be relatively inelastic in regions where geographical conditions or local land use regulations inhibit the development of urban land into residential property. If so, a rise in housing demand leads, all things being equal, to a larger increase in house prices than in regions where this additional housing can be supplied relatively quickly with respect to the conversion process for land and the required permits.[8] This type of structural characteristic may be more important for urban than for rural areas.

In conclusion, there are a number of structural characteristics that can affect the amplitude and timing of the house price cycle. These characteristics have remained sufficiently diverse across euro area countries to account for heterogeneities in house price cycles across countries, even in cases where countries would face broadly similar macroeconomic conditions.

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4   The implications of house price developments for the macroeconomy and financial stability

A recovery in house prices may have implications for both macroeconomic developments and financial stability.[9] This reflects the inherent interlinkages between house prices, the real economy and the financial sector, as well as the multiple channels through which developments in house prices can influence the economic decisions of households and banks. However, as the current recovery of house prices is taking place in a low interest rate environment, it is important to weigh the positive impact on the macroeconomy and the financial sector against the associated potential risks to financial stability.

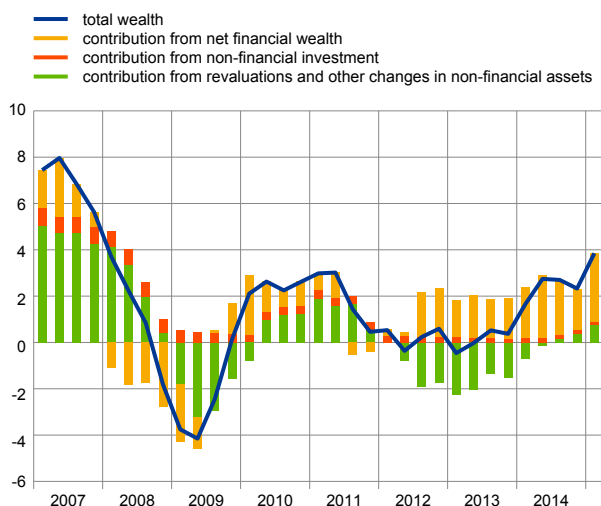[7] "Housing finance in the euro area", *Occasional Paper Series*, ECB, No 101, March 2009.

[8] Saiz, A., "The Geographic Determinants of Housing Supply". The Quarterly Journal of Economics, August 2010, pp. 1253-1296; Gyourko, J., "Housing Supply", *Annual Review of Economics*, September 2009, pp. 295-318; Andrews, D., "Real House Prices in OECD Countries. The Role of Demand Shocks and Structural and Policy Factors", Organisation for Economic Cooperation and Development, *Economics Department Working Papers* No 831; Catte, P., Girouard, N., Price, R. and André, C., "The Contribution of Housing Markets to Cyclical Resilience", Organisation for Economic Cooperation and Development, *Economic Studies*, Vol. 38, 2004/1; and Glaeser, E.., Gyourko, J. and Saiz, A., "Housing Supply and Housing Bubbles", *Journal of Urban Economics*, September 2008, pp. 198-217.

[9] See, for example, "Structural factors in the EU housing markets", ECB, 2003; "Housing Finance in the euro area", *Structural Issues Report*, ECB, 2009; "House price developments in the euro area and the United States", *Monthly Bulletin*, ECB, November 2011; and Hartmann, P., "Real Estate Markets and Macro prudential Policy in Europe", *Journal of Money, Credit and Banking*, 2015.

Chart 15

Changes to household net worth in the euro area

(year-on-year percentage changes and percentage point contributions)

- total wealth
- contribution from net financial wealth
- contribution from non-financial investment
- contribution from revaluations and other changes in non-financial assets

Sources: ECB and ECB calculations.
Note: Most recent observation is for Q1 2015.

The impact of house prices on the macroeconomy is typically felt via wealth and collateral effects on consumption, as well as incentive effects on housing investment. In fact, housing wealth in the euro area represents, on average, 37% of households' net worth. Thus, changes in house prices have a direct impact on households' net worth through holding gains/ losses on existing non-financial assets, typically the most important source of changes in households' net worth (see Chart 15). A prolonged period of rising house prices, or the expectation that there will be one, could be perceived by households as a permanent increase in wealth, which, in turn, could lead to stronger consumption via a propensity to save less or borrow more, and thereby to higher economic growth.[10] Box 2 discusses the macroeconomic effects of a housing demand shock in the euro area and the United States. Beyond wealth effects, higher house prices increase the value of the collateral against which households can borrow, and thus increase not only their borrowing propensity, but also their borrowing capacity and, in turn, potentially their spending. From an investment perspective, rising house prices may lead to an increase in the demand for residential investment if the value of new dwellings increases relative to their construction costs (i.e. if the so-called Tobin's q for housing investment increases), thereby leading to higher profitability and increased incentives for new constructions. In this context, house prices, like other asset prices, represent a potentially important component in monetary policy transmission, to the extent that changes in interest rates and other (non-standard) monetary policy measures affect house prices, thereby influencing private consumption and residential investment via the aforementioned channels.

Box 2

Macroeconomic effects of housing demand shocks

This box compares the macroeconomic effects of house prices in the euro area with those in the United States[11]. The analysis is based on a vector autoregressive model (VAR) that includes macroeconomic variables such as real GDP, consumer prices and the short-term interest rate, with house prices and real housing investment representing the housing sector. In this framework,
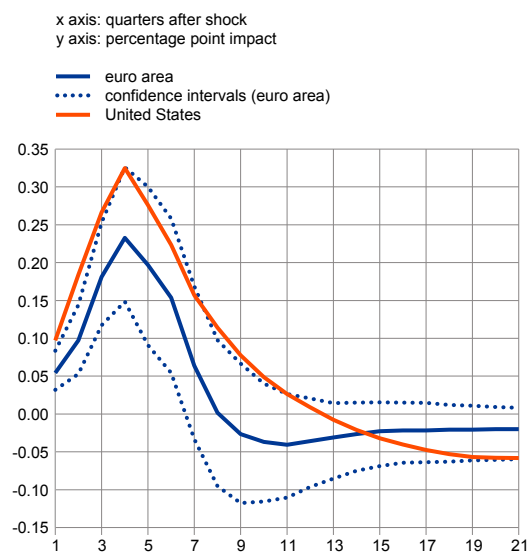
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[10] The magnitude of the positive effect on consumption from higher house prices is an empirical matter. However, several findings in the literature point to greater effects on consumption from housing wealth than from financial wealth, and to a greater impact in the United States than in the euro area.

[11] Results are obtained with an updated version of the model presented in Jarocinski, M. and Smets, F., "House prices and the stance of monetary policy", *Review*, Federal Reserve Bank of St. Louis, July 2008, pp. 339-366. The data in this analysis are quarterly and the sample is from Q1 1990 to Q4 2014. Four lags are included, as is the typical practice with quarterly data. The estimation is Bayesian, with standard priors for VARs. The role of the priors is to improve the econometric properties of the model, given that its size is large relative to the sample size. The priors used follow Sims. C. and Zha, T., "Bayesian Methods for Dynamic Multivariate Models", *International Economic Review*, 1998. By shrinking the coefficients, they overcome the overparameterisation of the VAR. A "loose" version of these priors is used.

Chart

Impulse response to a housing demand shock in the euro area and the United States

(year-on-year percentage changes)

x axis: quarters after shock
y axis: percentage point impact

— euro area
····· confidence intervals (euro area)
— United States

Source: ECB simulations.

a housing demand shock is identified by assuming that it causes a positive co-movement between house prices and housing investment on impact. In this analysis, a shock is simulated by assuming that it corresponds to the size of one standard deviation, i.e. the shock of the standard size encountered in the sample period (Q1 1990-Q4 2014).

A housing demand shock raises real GDP growth in the euro area for about two years. After a housing demand shock, the impact on real GDP growth builds up to peak after four quarters at about 0.25 percentage point. The effect then diminishes and fades in approximately two years (see the chart).

The results for the euro area are broadly consistent with other findings. Estimations for industrialised countries provide evidence of significant responses from house price shocks to real GDP.[12] Results for OECD countries[13] show that, economically, housing demand shocks have small but significant impacts on real GDP. Empirical studies investigating the macroeconomic effects of house price shocks in the euro area are, however, rather scarce compared with the research focusing on specific countries, but tend to corroborate these findings, notwithstanding some differences in the magnitude and profile of the responses to the shocks.

The US economy responds to a housing demand shock in a similar way, but with a stronger magnitude[14]. The VAR results suggest that the responses to the shock estimated for the United States are somewhat stronger on impact and more prolonged compared with those in the euro area. One possible explanation for the difference between the euro area and the United States is the stronger housing collateral channel in the latter. Since housing is more common as a form of collateral for loans to households in the United States, borrowing has a tighter link to house prices. Therefore, changes in house prices should have a stronger impact on credit conditions and, consequently, consumption, investment and GDP growth.

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[12] Interestingly, the effects of house price shocks do not become stronger in periods of house price booms. See Goodhart, C. and Hoffman, B., "House Prices, Money, Credit and the Macroeconomy", *Working Paper Series*, ECB, No 888, 2008. Their analysis is performed for 17 industrialised countries based on a fixed-effects panel VAR.
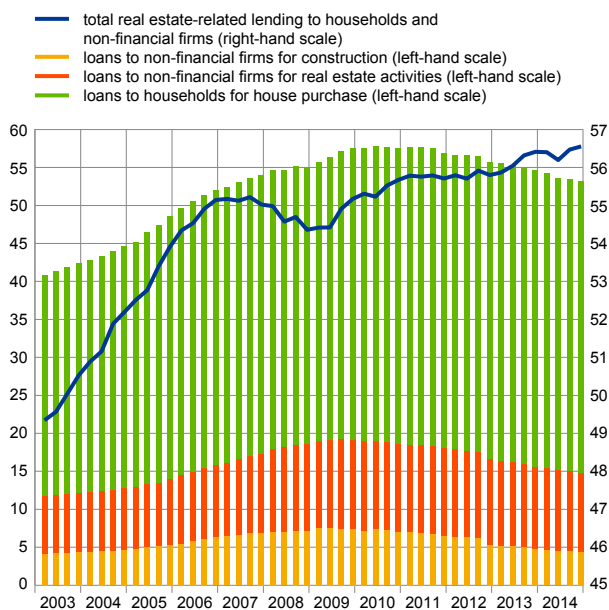
[13] See Cardarelli, R., Monacelli, T., Rebucci, A. and Sala, L., "Housing finance, housing shocks and business cycle: VAR evidence from OECD countries", unpublished manuscript, 2008.

[14] See Musso, A., Neri, S. and Stracca, L., "Housing, Consumption and Monetary Policy: How different are the US and the Euro Area?", *Working Paper Series*, ECB, No 1161, 2011.

Chart 16

Real estate-related loans of euro area MFIs

(percentage of GDP and percentage of total loans to households and non-financial corporations)

— total real estate-related lending to households and
   non-financial firms (right-hand scale)
— loans to non-financial firms for construction (left-hand scale)
— loans to non-financial firms for real estate activities (left-hand scale)
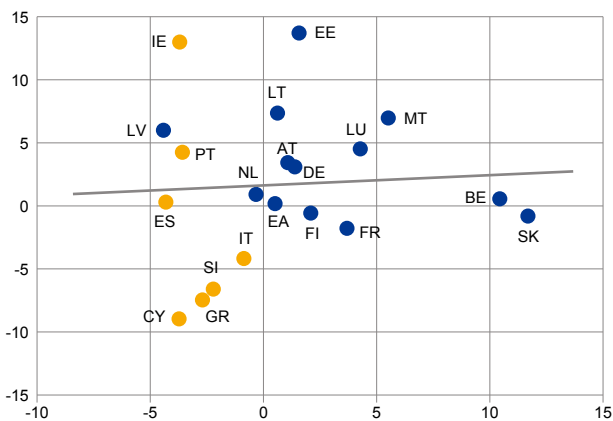— loans to households for house purchase (left-hand scale)

Source: ECB.
Note: Most recent observation is for Q4 2014.

Chart 17

House prices and loans to households in 2014

(year-on-year percentage changes, x-axis: loans to households, y-axis: house prices)

Sources: ECB and ECB calculations.
Notes: Bank lending data are adjusted for securitisation. Countries most affected by the financial crisis are Ireland, Greece, Spain, Italy, Cyprus, Portugal and Slovenia and are depicted with a yellow dot.

The wealth and collateral aspects of house price developments also have an important bearing on the health of the financial sector. This is reflected by the high importance of real estate-related lending relative to banks' balance sheets and overall economic output. In fact, as at the end of 2014, real estate-related loans to households and non-financial firms in the euro area accounted for nearly 57% of euro area banks' total loans to the non-financial private sector, some 17% of the euro area banking sector's total assets and 53% of euro area GDP, with loans to households for house purchase representing the largest share (see Chart 16). Banks typically decide on the volume of loans granted on the basis of borrowers' ability to service debts through income (i.e. loan-to-income ratios) and the value of the property used as collateral for the loan (i.e. loan-to-value ratios). Thus, the aforementioned positive wealth effects and underlying favourable changes in collateral values would translate into lower probabilities of default and losses given default. However, in the event of unsustainable property price developments, the financial sector may load risks onto its balance sheet, especially if house price developments not only have a bearing on the loan volume granted, but, more generally, also translate into laxer credit standards.

Positive effects of rising house prices on economic growth and the banking sector should thus be assessed against the related potential risks for financial stability. In the current low interest rate environment, greater appetite for risk may have the potential to push up real estate prices to values that are not justified by their fundamental values, a development that could be amplified by herding behaviour by investors in an environment of over-optimistic beliefs. In fact, residential property markets have been at the heart of many previous episodes of financial distress once buoyant house price developments started to be accompanied by strong credit growth and leverage. However, there are currently few signs of the ongoing recovery in residential property markets translating into either widespread house price imbalances or rapid housing loan growth at the level of the euro area as a whole or the respective national levels (see Chart 17), especially when compared with the situation prior to the crisis when most euro area countries recorded double-digit household loan growth. Any observed decoupling of loan growth from house prices in the current housing market recovery phase may reflect specific factors,

such as the presence of foreign buyers in certain (mainly high-priced) market segments, especially in some large cities, or the purchase of housing with cash. In this context, countries with stronger growth in average house prices in the past few years, such as Germany and Austria, show signs of regional buoyancy, where house prices may exceed their longer-term fundamental value.[15]

Macroprudential policies seem to be the most appropriate to mitigate real estate-related risks to financial stability, enabling granular and targeted policy action to be taken. The current very accommodative monetary conditions may not only stimulate economic risk-taking – necessary to ensure attainment of the price stability objective – but also lead to unintended side effects in the form of encouraging financial risk-taking.[16] Against this background, there is a need to monitor risk-taking behaviour and, specifically, residential real estate price growth, particularly if they are accompanied by increased leverage, as such developments could amplify the risk of an abrupt residential property price correction. If these were to be widespread, they would lead to instability in the financial system, thereby hampering monetary policy transmission and, ultimately, price stability. Macroprudential policy, comprising a set of granular measures, provides the most appropriate instruments for mitigating risks to financial stability and containing systemic risks in order to support and complement monetary policy, which is geared towards fulfilling the ECB's price stability mandate.

Several euro area countries have implemented macroprudential real estate instruments since the beginning of 2014, or plan to do so. In fact, the new macroprudential toolkit offers national authorities numerous property-related instruments. In terms of their objectives, these instruments may help to alleviate future cyclical challenges by smoothing the credit cycle and to increase the resilience of banks to potential house price excesses. Instruments targeting banks work via regulatory capital requirements, either directly (by imposing higher capital requirements) or indirectly (by targeting variables which affect capital requirements for real estate exposures). In this context, Belgium, for example, has decided to adjust risk weights under the Capital Requirements Regulation and Capital Requirements Directive IV, which has been in force since 1 January 2014. Instruments targeting borrowers work directly on the terms and conditions of the loans by making the volume of the loan granted dependent on the value of the underlying property or the debt-servicing capacity of the borrower.[17] Some countries have opted to introduce or adjust loan-to-value caps (e.g. Estonia, Ireland and the Netherlands), as well as loan-to-income (e.g. Ireland) or debt service-to-income (e.g. Estonia and Lithuania) limits under national legislation.

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[15]   See the February 2015 issue of the Deutsche Bundesbank's Monthly Report and Schneider, M., Wagner, K., and Waschiczek, W., *The OeNB property market monitor*, April 2015. These studies suggest that prices in German cities in 2014 could have been overvalued by between 10% and 20%, and prices in Vienna at the end of 2014 by 19%.

[16]   For a more detailed discussion, see the box entitled "Accommodative monetary policy and euro area financial stability", *Financial Stability Review*, May 2015.

[17]   For a more detailed description of macroprudential real estate instruments, see the ESRB Handbook on Operationalising Macro-Prudential Policy in the Banking sector, March 2014, pp. 49-76.

5   Conclusions

The ongoing upturn in euro area house prices appears to be sustainable.
However, it seems that the current recovery is weaker than the typical increase
observed historically during the initial phase of an upturn in house prices after a
trough, and that it has not so far been accompanied by a significant increase in euro
area real household loans. The ongoing recovery in house prices should be further
supported by improving prospects for households' income and employment, as well
as favourable financing conditions. The prevailing low interest rate environment and
its implications on yields will play an important role in this.

**Substantial corrections in earlier house price imbalances have taken place in
several euro area countries.** Since 2007, when the downturn for euro area house
prices started, the large heterogeneity in house price dynamics reflected, among
other things, country-specific boom-bust cycles, demand and supply conditions,
and structural factors. Housing markets in countries which have already corrected
previous excesses in house price growth are likely to benefit more from the current
favourable environment in terms of low interest rates and improving macroeconomic
conditions, and vice versa.

**Risks to financial stability appear to be limited at the current juncture, not
least as the ongoing recovery in house prices has not translated into rapid
credit growth so far.** The new macroprudential toolkit has allowed several
countries to take steps to rein in any potential house price and credit exuberance,
with the numerous property-related instruments boding well for the alleviation of any
future cyclical challenges, while also helping to increase the resilience of banks and
their borrowers.