

## IV. The start of a new cycle: Recent housing price dynamics in Europe and their macroeconomic implications

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*After a slump between 2007 and 2013, real house prices in Europe are bottoming out and, in cases, rebounding at accelerating speed. While important in absolute terms, the magnitude of the correction experienced is generally limited when compared to the cumulated growth during the pre-crisis boom so that house prices in most Member States remain close to the peak values reached in 2007-2008. This could suggest that in some cases, further downward correction may be expected. Meanwhile, in a number of countries, recent house price increases have been substantial, reaching more than 5% per annum.*

*The analysis of vulnerabilities linked to residential real estate markets is an essential part of the macroeconomic imbalances procedure (MIP). The risks of over-valuation on the housing market are gauged using a variety of indicators and models which compare house price developments with the underlying fundamentals. These tools paint a contrasted picture of house price developments in the euro area. In some countries, notably Belgium, Luxembourg and Austria, house prices are increasing from an already high level compared to fundamentals. This warrants a detailed analysis of potential risks in the upcoming country reports in the context of the European Semester. By contrast, a majority of the euro area countries with recent strong price increases do not show clear signs of over-valuation.*

*Beyond prices, a number of factors need to be taken into account when assessing vulnerabilities on the residential real estate market. In particular, the strength of households' balance sheet and the health of the banking sector are important qualifiers. In countries like the Netherlands and Finland, the high household indebtedness could represent a vulnerability in the event of a downward house price correction.*

*The section provides a historical comparison of the current cycle with previous house price cycles. It analyses the current recovery in housing markets and assesses the extent to which risks are building up again. <sup>(133)</sup>*

### IV.1. Introduction

House price slumps are usual companions to banking crises. As a matter of fact, a review of historical episodes of banking crises shows that a rapid increase in housing prices is among the best predictors of a looming banking crisis.<sup>(134)</sup> Most recently, the origins of the 2007 financial crisis are rooted in the burst of the sub-prime housing market bubble in the United States, which then had ripple effects throughout the world. In Europe, the genealogy of the crisis is less clear-cut, with the economies being diversely affected by a mixture of spill-over effects and bursting of home-grown imbalances. In particular, the interplay between a decline in real house prices and the deteriorated macroeconomic environment has had a durable negative impact in most Member States.

Real house prices in the euro area contracted by 12% on average between 2007 and 2013. In Estonia and Ireland, house prices plummeted by close to 50% between the pre-crisis peak and the trough. A number of EU Member states outside the euro area also experienced a strong correction in real house prices.<sup>(135)</sup> Such sharp decreases in housing prices impacts on the real economy through a number of channels. First, a drop in housing prices reduces the wealth of households, potentially putting a number of them in a situation of negative equity. In countries where wealth effects are large, this has a feedback effect on growth. A decrease in housing prices reduces the value of the collateral against which banks ensure that their loans will be repaid. This results in balance sheet constraints in the banking sector which eventually hamper credit growth and investment. Construction is also directly affected as orders plummet. Indeed, value added in the construction sector decreased by 14% in the EU

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<sup>(133)</sup> Section prepared by Nicolas Philipponnet. The author wishes to thank Bjorn Dohring for useful comments.

<sup>(134)</sup> Reinhart, C. and K. Rogoff (2008), 'Is the 2007 US sub-prime financial crisis so different? An international historical comparison', *American Economic Review*, Vol. 98, N°2, pp. 339-344.

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<sup>(135)</sup> For example Romania saw a 55% decrease in real house prices between 2008 and 2014.

between 2007 and 2013 and construction employment decreased by 20%.

The economic recovery, which started in 2013, is expected to gain steam.<sup>(136)</sup> GDP growth in the euro area is set to stand at 2.2% and the unemployment rate is set to fall to 9.1%, compared to 12.0% in 2013. With improving in cyclical conditions, house prices are also generally back to positive growth rates. However, in light of different experience in post-crisis with house price developments, the on-going recovery may have different implications in the various Member States. In a number of them, the correction in house prices has been much smaller than the previous hike. While the favourable economic outlook, and in particular the low level of interest rates, supports the recovery of housing markets, notably in countries which are still affected by large deleveraging needs, it could also nurture growing imbalances in others. Renewed attention is thus warranted to ensure that the upcoming cycle does not lead to a repetition of the recent episode of booms and bust.

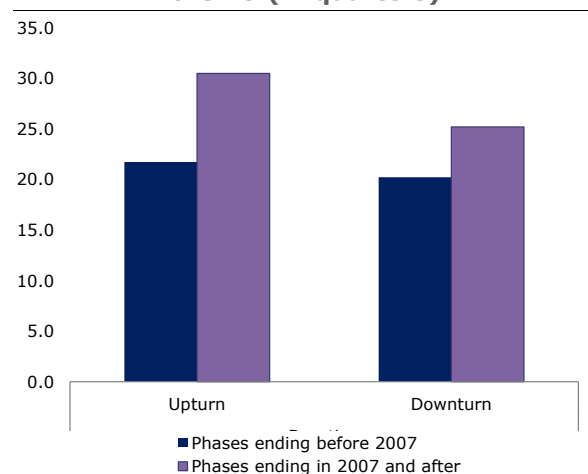
This section reviews the recent developments in housing markets in the euro area with a view to assess potential risks. The first subsection presents evidence on the extent to which housing imbalances at the time of the financial crisis in the EU as a whole have been resolved. Then, focusing specifically on the euro area, a review of recent developments in housing markets is conducted. Specific focus is put on the potential risks of price over-valuation in Member States. To conclude, the last sub-section outlines priorities for country monitoring going forward and discusses potential policy avenues in the euro area. While the focus is put on dynamics in the euro area, aspects of housing market developments in non-euro area countries of the European Union can also be relevant to put into perspective dynamics in the euro area. Dynamics in non-euro area countries is thus used as a benchmark when appropriate.

#### IV.2. Housing markets during the global financial crisis: a mostly synchronised boom and bust

Booms and bust on the housing market are in no way a novelty. Over the last 40 years, Member

States have experienced a number of episodes of strong growth followed by an adjustment in house price. The adjustment has been severe at times. For example, real house prices decreased by 50.4% in the Netherlands between 1978 and 1985. Similarly, they decreased by 49.7% in Finland between 1989 and 1993. However, compared to previous housing cycles since 1970, the increase in prices which ended with the 2007 crisis and affected similarly the euro area and the overall EU was unprecedented on several grounds.

Graph IV.1: Duration of housing cycles in the EU (in quarters)



Simple average of phase durations across the EU. Upturns ending after 2007 refer to pre-crisis increases. The upturn in DK, which ended in 2006 Q3 is included in that group. Downturns after 2007 are post-crisis episodes. Only completed phases are considered. Peak and trough are based on local maxima over a 25-quarter rolling-window.

Source: Eurostat, ECB, BIS, OECD.

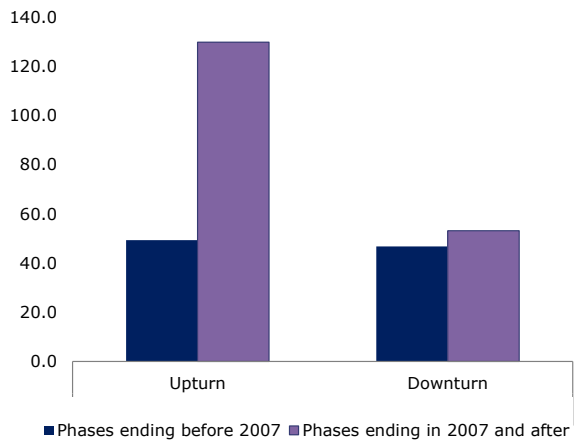
First, it lasted significantly longer than previous upturns (Graph IV.1). Before the current cycle, upturns in real house prices had lasted on average for little over 5 years. By comparison, the hike in real house prices which ended in 2007-2008 lasted almost 8 years. In the Netherlands and Belgium, the increase in real prices was uninterrupted between 1985 and 2008. Second, the increase experienced prior to 2007 surpassed that of the upturn phases recorded in OECD countries over the last 40 years.<sup>(137)</sup> Focusing on the EU, the house price boom which ended in 2007 saw real house prices increase on average by 120% (Graph IV.2). This is almost three times as large as the average for the previous cycles. Extreme examples

<sup>(136)</sup> European Commission (2017), 'European Economic Forecast – Autumn 2017', *European Economy*.

<sup>(137)</sup> Bracke, P. (2013), 'How long do housing cycle last? A duration analysis for 19 OECD countries', *Journal of Housing Economics*, Vol. 22, pp. 2013-230.

include Latvia and Ireland where real house prices in 2008 were close to 3.5 times higher than during the previous trough.

Graph IV.2: **Magnitude of housing cycles in the EU (in %)**



Simple average of phase magnitudes across the EU. Upturns ending after 2007 generally refer to pre-crisis increases. Downturns after 2007 are post-crisis episodes. Only completed phases are considered. Peak and trough are based on local maxima over a 25-quarter rolling-window. In order to have comparable metrics for upturns and downturns, magnitudes are computed in both case as the difference between the peak and the trough values as a percentage of the latter.

**Source:** Eurostat, ECB, BIS, OECD.

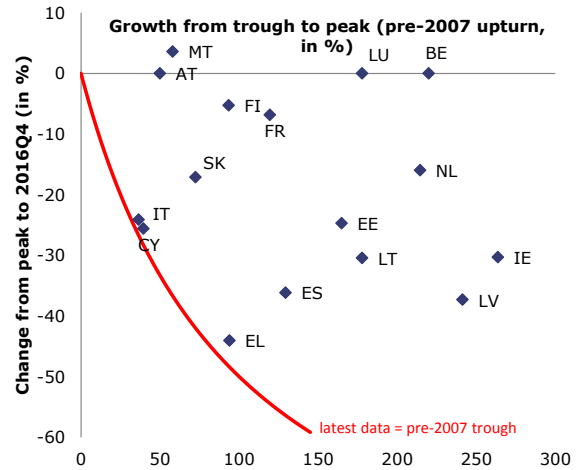
Finally, from a cross-country perspective, the boom was much more synchronised than previous examples. <sup>(138)</sup> Prices increased rapidly ahead of the financial crisis in almost all EU Member States. Taking a longer-term perspective, the increase in land prices, due to the conjunction of increasing demand and long-term supply constraints on land availability, have pushed house price indices in Europe to levels that are unprecedented in the last 150 years. <sup>(139)</sup> Germany and Portugal stand as the two main exceptions to the strong housing price dynamics in the 2000's. In Germany, the impact of the reunification resulted in a positive supply shock which resulted in muted house prices developments in the following two decades. In real terms, house prices in Germany decreased between 1996 and 2008 before finally picking up. In 2016 they were only close to their 1990 level. In Portugal, the poor economic performance recorded

<sup>(138)</sup> Girouard, N., M. Kennedy M., P. van den Noord P. and C. André (2006), 'Recent housing price developments: the role of fundamentals', OECD Economics Department Working Papers No. 475.

<sup>(139)</sup> Knoll K., M. Schularick and T. Steger (2017), 'No price like home: global housing prices, 1870-2012', *American Economic Review*, Vol. 107(2), pp. 331-353.

between 2000 and 2008 resulted in almost flat house prices over the period, in contrast with the rest of the EU.

Graph IV.3: **Correction of the pre-2008 housing boom**

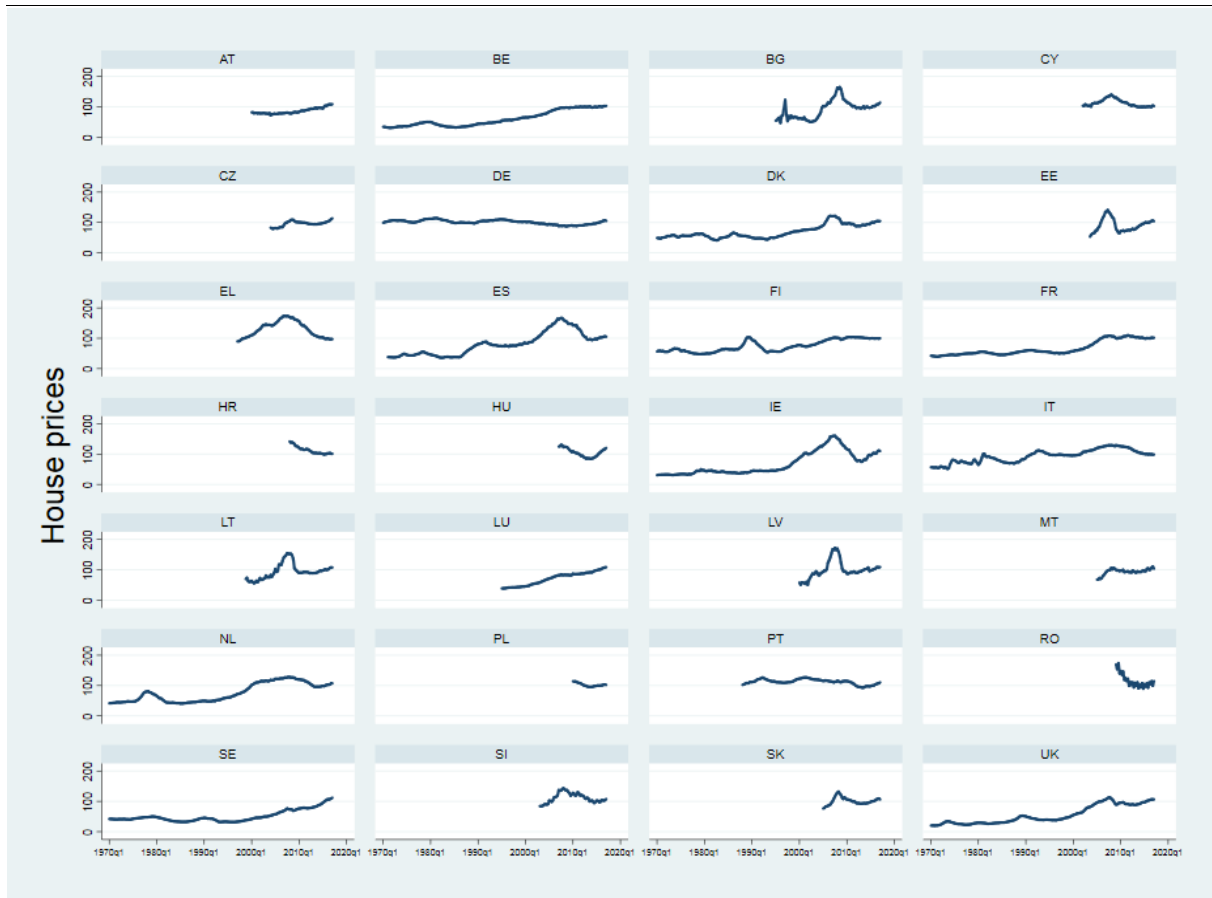


Countries which did not experience a boom (DE, PT) are excluded. Trough values refer to the latest troughs in the sample period prior to 2008. The continuous line indicates the post-crisis adjustment needed to compensate the pre-crisis growth in house prices.

**Source:** European Commission, ECB, BIS, OECD.

Looking at the house price cycles in the EU which preceded the current phase, the duration of the correction in prices was generally similar to that of the preceding upturn. In addition, at the end of the downturn, house prices in real terms were back to pre-boom levels. Since the global financial crisis, a number of EU economies have experienced severe correction in real house price indices compared to their peak. International evidence suggests that real house prices are not stationary, meaning that they do not revert to a given "long-term value". Still, the magnitude of the decrease in house prices since the crisis has often been linked to the previous growth. It was notably strong for example, in Latvia, Ireland and Bulgaria. Still, even in these countries, the magnitude of the correction remains lower than that of the price hikes recorded before the crisis (Graph IV.3). Only Italy, Cyprus and Greece have experienced decrease in real house price indices bringing prices back to their pre-boom levels. In several countries, the improving economic situation has brought the correction in real house prices to an end. Housing prices have experienced a turnaround since 2013 and are now on an increasing trend. With some exceptions, such as Estonia and France where the adjustment in prices lasted less than 2 years, the timing of the turnaround is somehow consistent with previous evidence on housing price cycles. Despite a strong

Graph IV.4: Real house price developments in the EU (2010=100)



Source: European Commission, ECB, OECD, BIS

housing boom ahead of the crisis, the adjustment was particularly limited in Belgium and in the United Kingdom. Characteristically, Luxembourg and Sweden did not experience any correction in house prices and these two countries have seen uninterrupted growth in real house prices since 1995.

Overall, the comparison between the developments in real house prices since 2007 and the previous house price cycles suggest that the adjustment in house prices has only been partial. This gives rise to two possible interpretations. The more benign one posits that the increase in house prices experienced prior to the financial crisis was of an exceptional nature, reflecting notably the increasing integration and sophistication of financial markets in the EU, meaning that prices should not be expected to correct further. This is consistent with the view that real house prices are not mean-reverting. A more pessimistic observer, wary of previous crisis episodes, could also consider that a number of exceptional factors, among which the low interest rates and low commodity prices, have

brought about a temporary recess in the real house price cycle which is however set to come to a closure with further adjustment in real prices to come in the next few years. The remainder of the article broadens the scope of the review to assess the extent to which fundamental factors driving housing prices and other macroeconomic variable can help draw where euro area housing markets stands between these two polar cases.

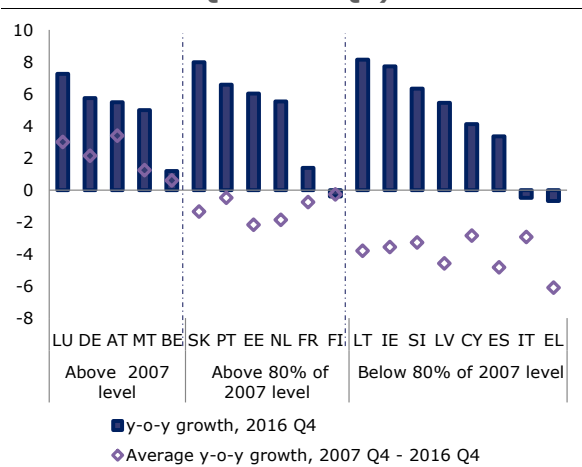
### IV.3.Recent developments: gradual recovery and rising heterogeneity

In 2016, house prices across the euro area are resolutely on an upward trend. Euro area Member States experienced an acceleration in house prices, which increased by at least 5% in real terms in a third of them. The hike has been particularly strong in Ireland, Latvia, Luxembourg and Slovakia, where real house prices increased at a rate above 7% per annum. Estonia and Ireland, which experienced a strong house price correction during the crisis, saw price increase by more than 25% in cumulated terms since 2013. In the EU at large, some

countries record even stronger growth. In particular, in Hungary and in Sweden, prices increased by close to 30% over the last three years. The buoyant growth in house prices in the euro area could give rise to concerns over the repetition of an asset price bubble in some Member States.

A clear difference should however be made between countries which experienced a sizeable correction in house prices after 2007 and those for which the increase has remained barely uninterrupted (Graph IV.5). In this latter category, Luxembourg and, outside the euro area, Sweden, stand as the epitomes of countries where real house prices appear to be growing towards ever increasing heights (Graph IV.3).<sup>(140)</sup> In Malta, although significant price correction occurred after 2007, the recent price growth has brought prices back to or above their 2007 value. In Belgium and France, although prices have not significantly gone down compared to 2007, house prices seem to have stalled since then.

Graph IV.5: Real house price growth (2007 Q4 - 2016 Q4)



Compounded average growth rate in house prices.  
**Source:** European Commission, ECB, BIS, OECD.

By contrast, in a majority of cases, the recent increase come after sizeable corrections and housing markets are only at the early stage of recovery. Indeed, in spite of the recent hike in price dynamics, house prices generally remain well below their pre-peak levels in the countries which experienced a sizeable bust in real house prices in 2008. The diversity seen in the house price dynamics across the euro area calls for specific

attention in light of the convergence of interest rates across the area induced by the common monetary policy as there are risks that a rate appropriate in one country could be too low to avert potential credit-fuelled house price booms in another.

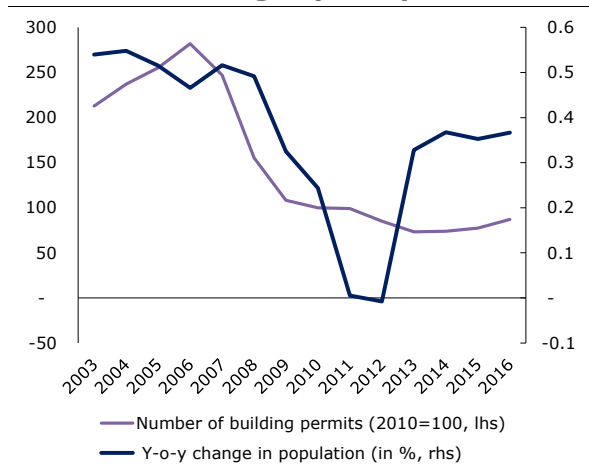
Indicators on the volume of construction and on investment also provide evidence of a rapid, but still nascent recovery. With few exceptions (Greece, Latvia, Portugal and Slovenia) investment in dwellings increased in 2016. Still, for the euro area as a whole, dwelling investment represented 5.1% of GDP in 2016, markedly below the 6.7% peak reached in 2006 and 2007 and also below the pre-boom levels. Similarly, building permits are on a gradual but still subdued upward trend.

As house prices plummeted and macroeconomic perspective darkened, the annual number of building permits granted in the euro area was divided by 2.6 between 2006 and 2009. Since then, construction activity remained almost flat up until 2016. The failing population growth over that period has notably put downward pressure on construction activity. Since 2013 the number of building permits is rising again, as is the case for prices. However, in spite of population growth which is close to its historical average, the recovery in building permits appears much more limited than for prices, shedding a more nuanced light on the current recovery.

The turnaround in the housing market is supported by the overall positive economic outlook in the EA. After the drop in GDP in 2009, the EA experienced several years of sluggish economic activity. In volume terms, GDP surpassed its 2007 level in 2015 and it is has been growing above potential for the third year in a row. Meanwhile, in a context of positive population growth, the gross disposable income per capita increased by 1.6% in real terms in 2016, a level last seen in the early 2000's. Disposable income determines the ability of households to purchase housing and such an increase is thus set to result in higher demand for housing, with positive impact on prices.

<sup>(140)</sup> No significant bust was observed in Sweden, Luxembourg or Austria, meaning that prices have continued their upward trend.

Graph IV.6: **Building permits and population changes (EA 19)**



Source: European Commission.

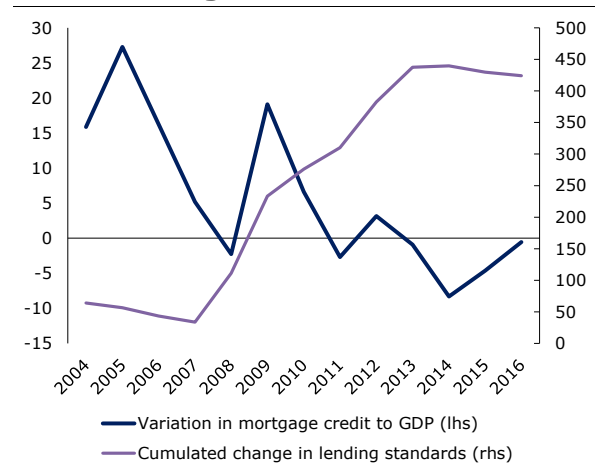
Meanwhile, mortgage rates across the euro area have continued to decrease in 2016 on the back of accommodative monetary policy. The relatively low interest rates improve the ability of households to borrow, further supporting housing market growth. These macroeconomic tailwinds are expected to continue supporting housing prices in the medium term. According to the European Commission forecast,<sup>(141)</sup> the economic growth experienced in the euro area in 2016 is expected to remain strong in 2018 and 2019. The positive employment dynamics should be supportive of real income growth.

Credit market developments are an important companion to the housing market cycle. The relationship between credit and housing is two-way. On the one hand, increasing housing prices will reduce the ability of households to finance the purchase without getting indebted, thus increasing the use of mortgages. Conversely, lenient credit conditions by banks increase the access to credit of previously credit-constrained households. This increases the potential demand for houses, putting upward pressure on real house prices. Due to the endogenous relationship between housing and credit, mortgages can be subject to the same type of bubbles as housing. Indeed, in the 2000's, the conjunction of large liquidity available in the banking sector and positive housing price outlook led to a rapid increase in mortgage credit in most EA Member States.

<sup>(141)</sup> European Commission (2017), 'European Economic Forecast – Autumn 2017', *European Economy*.

Indeed, the outstanding amount of mortgage credit in the euro area doubled between early 2000 and the end of 2007. In 2008, credit conditions tightened considerably and mortgages as a share of GDP dropped (Graph IV.7). Since then, the deleveraging by households has resulted in a gradual decrease in mortgage credit as a share of GDP. Also, while banks have started to ease credit standards in 2013, the extent of the relaxation is of a much lower magnitude than the preceding tightening.<sup>(142)</sup> Going forward, the remaining deleveraging needs for the household sector in a number of Member States, together with balance sheet constraints in the banking sector in some others, mean that credit developments could remain muted.

Graph IV.7: **Mortgage credit growth and lending standards in the EA**



Mortgage credit as a share of GDP: LV included in the aggregate for the first year in 2010, EE in 2008, SK in 2006, MT and CY in 2005. Together, these Member States represent 0.9% of total mortgages in the EA. Cumulated change in net percentage change in lending standards for the euro area since 2003. Net percentage changes correspond to the difference between the share of responding banks reporting a tightening of credit standards and the share reporting a loosening.

Source: ECB, European Commission.

So much as the pre-2008 housing cycle was characterised by a homogenous increase in housing prices throughout the euro area, the adjustment phase has been marked by raising heterogeneity. Even among the countries where prices adjusted,

<sup>(142)</sup> The quarterly Eurosystem bank lending survey assesses changes in lending standards. It is considered to have a "tightening bias": banks report more often a tightening than a loosening of credit conditions. This limits the interpretation of cumulated changes in credit conditions. However, specific questions were introduced on the level of credit standards since 2014. In 2017, 37% reported a tightening compared to 2010 and 24% a loosening. Compared to 2003, 48% of banks report a tightening and 8% a loosening.

different paths can be delineated, which depend notably on the level of indebtedness. Indeed, a high level of household debt constrains both the ability of household to access credit to invest in a new home and, at the aggregate level, may constrain the ability of banks to expand credit, thus acting as a drag on housing markets. Indeed, a number of countries with large household indebtedness (e.g. Cyprus, Portugal or Spain) continue to experience negative credit flows in the household sector and weak construction activity.

In addition to having led to heterogeneous developments in housing prices across Member States, increasing gaps in housing prices between regions are also recorded. For several Member States, statistics at the regional level show that, over the past few years, house prices in the main cities have grown much faster than in the rest of the country. For example, in Austria, dwelling in Vienna are 82% more expensive in 2016 than in 2008 while, in the rest of the country, prices have increased by a much lower 48% over the same period. Such discrepancies between regions are common as both the level and the volatility of house prices depend on local characteristics including land availability, regulatory constraints and planning system.<sup>(143)</sup> However, in a context where the construction sector remains depressed and where few construction projects are started, the increase in housing demand will mostly translate into price increases. The impact can be expected to be the strongest in places where supply constraints are already strong in normal times, notably in cities.

Overall, recent developments in the EA suggest that except in few Member States, housing markets have recovered from the crisis. Prices are on an upward trend in most of the EU and volume and credit are also recovering. Such a trend is also set to continue as macroeconomic circumstances continue improving.

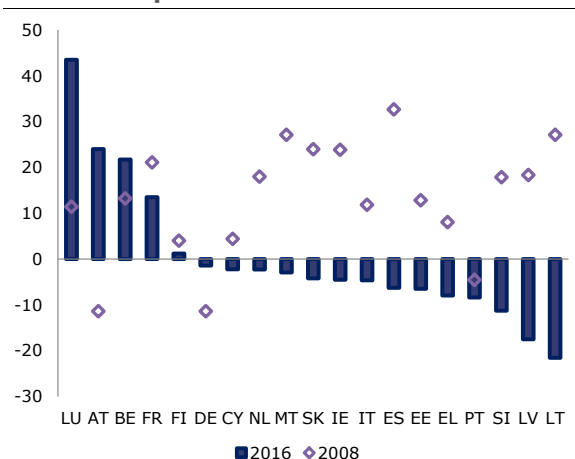
Still, the discrepancies between the situations in the various Member States have widened in the last few years as some countries are still burdened by the legacy of the financial crisis. This calls for a detailed assessment of the risks in the various Member States. Even within Member States, gaps

can be observed between house price dynamics in the various regions. Such discrepancies pose important challenges for policy action and the related vulnerabilities need to be monitored.

#### IV.4. Housing price valuation gaps

In order to complement the assessment in the housing market, specific metrics are routinely used to assess the risk of a correction. These include the ratio between house prices and the gross disposable income of household or with rents. Econometric modelling is also useful to determine the extent to which fundamental drivers can explain developments in house prices. As is the case for any asset price, the assessment of potential over-valuation of house prices is subject to considerable uncertainty. Still, combining various approaches can help identify potential deviations from long-term trends and highlight mounting vulnerabilities.

Graph IV.8: Valuation gap based on the price-to-income ratio



Valuation gaps are based on the difference between the latest data for the ratio and the average computed over 1995-2016. **Source:** European Commission, ECB, BIS, OECD.

The price-to-income ratio assesses developments in the affordability of housing. By comparing changes in the house price index to that of households' gross disposable income per capita, the ratio helps identify potential risks of corrections.<sup>(144)</sup> A hike in the price-to-income ratio is likely to make it more difficult for households to purchase a dwelling. They would thus turn toward renting or postpone their purchase. This will result in a

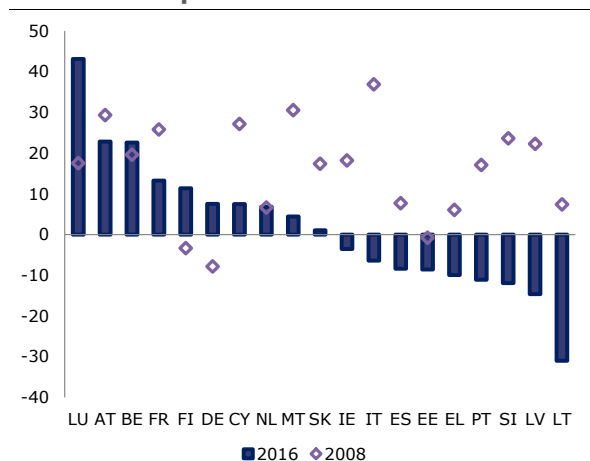
<sup>(143)</sup> Hilber C. and W. Vermeulen (2014), 'The impact of supply constraints on house prices in England', *Economic Journal*, Vol. 126, pp. 358-405.

<sup>(144)</sup> As the housing prices are an index, the actual value of the ratio does not have an economic interpretation and cannot be compared across countries.

decrease in demand, and an adjustment in prices. The credit market, by allowing households to finance their investment through indebtedness, can cushion the adjustment. Still, comparing the price-to-income ratio to its long-term value helps characterising the current situation of potential home-owners. Similarly, comparing the current price-to-rent ratio to its long-term average provides an assessment of the yield that investors can expect from housing investment. Too low a yield is set to discourage potential investors, thus bringing the ratio back to its long-term value.

The price-to-income and price-to-rent ratios confirm the findings that the adjustment in house prices has been uneven (Graph IV.8 and IV.9). Ahead of the financial crisis, the price-to-income and the price-to-rent ratios reached levels which were much above historical benchmarks. In more than 10 Member States, both ratios were more than 10pp above their long-term average in 2008. Such developments gave rise to the concern that both series could have experienced a structural break, and that the gap to long-term levels may no longer provide a reliable indication of potential vulnerabilities. In particular, increasing access to credit, which allows households to buy dwelling representing a larger percentage of their income could contribute to increase the price-to-income ratio that households can sustain.

Graph IV.9: Valuation gap based on the price-to-rent ratio

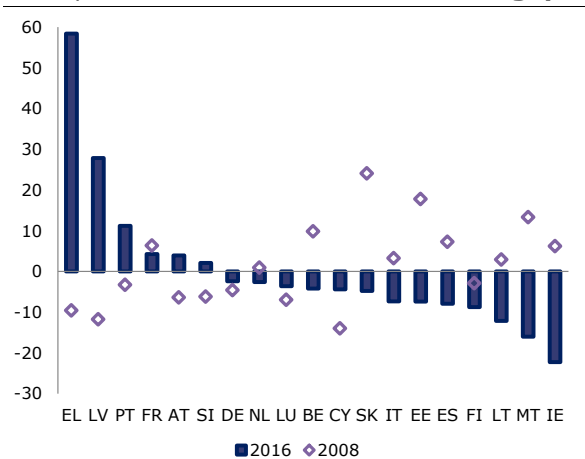


Valuation gaps are based on the difference between the latest data for the ratio and the average computed over 1995-2016. **Source:** European Commission, ECB, BIS, OECD.

However, with the exception of a few Member States, countries in the euro area have seen a sharp decrease in both ratios after the crisis. In 2016, more than half of the EA Member States record

price-to-income and price-to-rent ratios that are below their long-term average (Graph IV.8 and IV.9). The correction in the ratios since 2008 has been particularly large in Latvia and Greece which now appear to have considerable scope for price increase based on these metrics. By comparison, a number of Member States show very large adjustment need based on the approach through ratio: in particular, in Luxembourg and Austria, the ratios have continued to grow throughout 2008-2016 and they are at record level. In Luxembourg, house prices are 40 pp. beyond the level suggested by historical analysis of ratios. In Belgium and France, although the two valuation ratios corrected somewhat after 2008, the valuation gaps based on ratio analysis exceed 10 pp. <sup>(145)</sup>

Graph IV.10: Model-based valuation gap



**Source:** European Commission, ECB, BIS, OECD

In order to further investigate the contribution of fundamental economic drivers to the developments in house prices, an econometric analysis can be conducted. Such reviews are routinely done, either at the country level or taking groups of countries, to disentangle the role of the various fundamentals. <sup>(146)</sup> Based on a panel approach, the contributions of fundamental drivers to the change in house prices in the EU can be computed (see Graph IV.10 and Box IV.1 for a description of the

<sup>(145)</sup> In Malta, due to the absence of sectoral account providing households' gross disposable income, the overall gross domestic income is used. This metric may be biased due to the large offshore sector.

<sup>(146)</sup> For a review of the available studies on countries and group of countries, see Girouard, N., M. Kennedy M., P. van den Noord P. and C. André (2006), 'Recent housing price developments: the role of fundamentals', OECD Economics Department Working Papers N° 475.



**Box IV.1: An error-correction model for housing prices in the EU**

In order to take into account the simultaneous impact of various fundamental drivers of house prices, a cointegration analysis can be developed. <sup>(1)</sup> In line with the long-term properties of house price series, the relationship between house prices in real terms (RHP) and a number of determinants (X) is estimated.

$$RHP_t^i = \alpha^i + \beta \cdot X_t^i + \eta_t^i$$

As the aim of the analysis is to estimate house prices benchmarks, the specification focuses on fundamental drivers of house prices and do not include explanatory variables that may be subject to the same boom and bust cycles as house prices themselves. In particular, mortgage loans are not included in the specification. The explanatory variables considered need to be available for all European countries over a sufficiently long period.

Overall, the specification used focus on four explanatory variables: population, disposable income, housing investment and interest rates. Statistical tests confirm that these variables are cointegrated. A panel cointegration relationship is thus estimated, using dynamic OLS and country fixed-effects. All coefficients are significant at the 1% level:

- Population: Demographic developments have a long-term positive impact on the housing market as housing demand in the long term is primarily driven by growth in the number of households.
- Real per capita disposable income: The higher the per-capita disposable income of households, the more they can spend to purchase a house. The positive elasticity of real house price to real per-capita disposable income is a sign that housing is a superior good.
- Real housing investment: Housing investment is used as a proxy for the flow of housing services. Housing investment increases the stock of housing but also denotes higher demand. Its impact on house prices is a priori ambiguous but is estimated to be positive.
- Real long term interest rates increase the cost of credit. As a consequence, they have a negative impact on housing demand and on house prices.

Table 1:

	<b>Coefficients</b>	<b>Standard errors</b>
Total population	1,89	0,28
Disposable income	0,57	0,07
Housing investment	0,39	0,05
Long-term interest rate	-0,016	0,004
<i>Nb of cross-sections</i>		19
<i>Nb of observations</i>		492

As an alternative to the panel data analysis, for countries with sufficiently long time-series, country-specific cointegration relationships are estimated. The model-based valuation gap is then computed as the average of the gaps provided by the panel and country-specific analyses.

<sup>(1)</sup> Philipponnet N. and A. Turrini (2017), ‘Assessing housing price developments in the EU’, *European Economy*.

methodology).<sup>(147)</sup> In some countries where fundamentals remain depressed, and notably in Greece and Portugal, the usual drivers of house prices suggest an even stronger adjustment than the current one. Conversely, for countries where prices have increased throughout the global

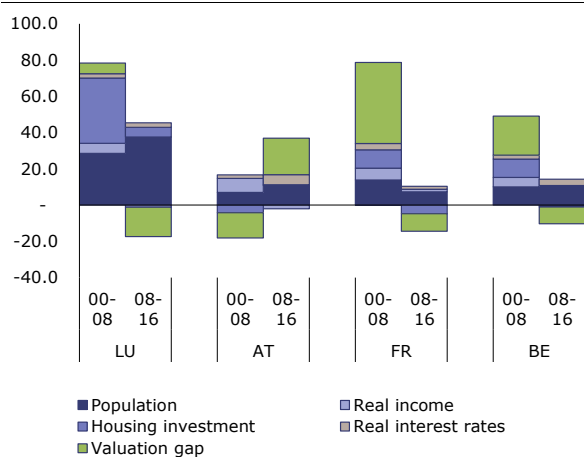
financial crisis, the econometric analysis can provide a more nuanced view of price developments. In particular, such an analysis makes it possible to assess the extent to which the growth in house prices in these countries reflects a continuous improvement in fundamentals or if it results from over-valuation.

<sup>(147)</sup> Philipponnet N. and A. Turrini (2017), ‘Assessing housing price developments in the EU’, *European Economy*, Discussion paper N° 48.

In Austria, while fundamentals account for most of the house price growth, the valuation gaps have

also risen since 2008 (Graph IV.11). For other countries, and notably in Luxembourg, the house price increases since 2008 are below what developments in its macroeconomic drivers would suggest, and house prices have come closer to their fundamental level. However, the adjustment in the valuation gap is often quite limited compared to the previous increase. This is notably the case in France and Belgium.

**Graph IV.11: Contribution of fundamentals to real house price growth**



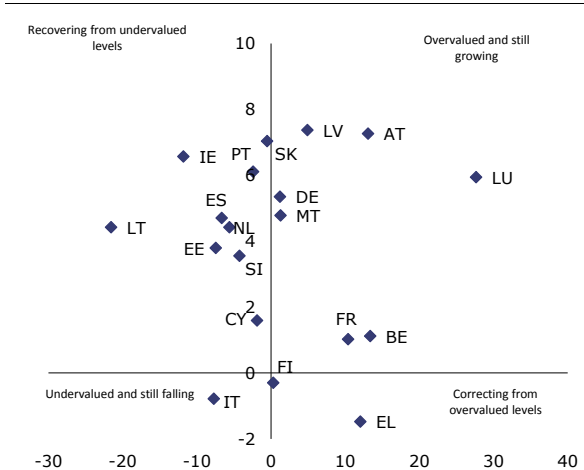
**Source:** European Commission, ECB, BIS, OECD.

The individual valuation benchmarks can be combined into a single synthetic indicator. Such an approach then provides a mapping of the valuation gaps in the various Member States based on the potential house price adjustment needs and on recent dynamics (Graph IV.12). According to this mapping, Luxembourg, and Austria appear as the euro area countries which cumulate very large house price over-valuation and strong price dynamics. Outside the euro area, Sweden and the United Kingdom also show fast increasing prices and over-valuation. Although fundamental drivers explain part of the increase, these countries are the ones for which the risk of an adjustment in prices going forward appears the strongest.

A second group of countries, more numerous, includes the Member States where the recent acceleration in house prices has brought prices close to their benchmark level. This group of countries with "catching-up housing markets" notably includes Latvia and Slovakia and outside the EA, Bulgaria, the Czech Republic, Hungary and Romania. In these countries, house prices have recorded very large increases over the last few months. For these countries, time series for house

prices are generally relatively short and valuation metrics are thus subject to uncertainties. Still, the various methodologies do not signal specific over-valuation concerns. The recent price dynamics nevertheless calls for careful monitoring. In particular, credit developments and regional disparities should be reviewed. Indeed, while prices at the aggregate level appear to be in line with fundamentals, they may be well above in constrained areas such as the capital city. In the other Member States, while prices adjustment cannot be ruled out, risks of over-valuation or of spiralling housing price inflation appear less acute.

**Graph IV.12: Overall valuation gap and real house price growth (in %, 2016)**



The overall valuation gap is computed as the simple average of the price-to-income, price-to-rent and fundamental gap

**Source:** European Commission, ECB, BIS, OECD.

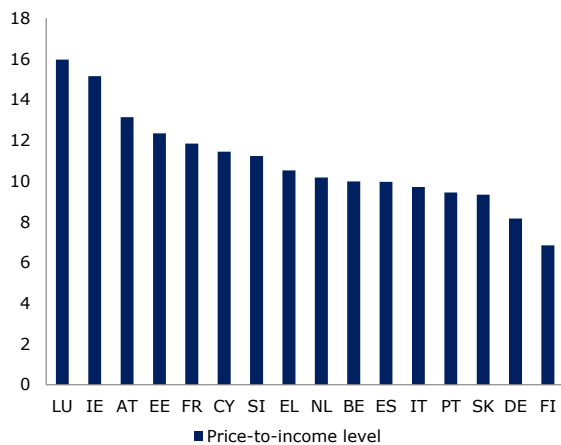
The price-to-income and price-to-rent ratios provide indications of the deviation compared to historical benchmark. However, as information on the level of prices is not available in a comparable way across countries, these analyses rely on indices and they do not allow for a cross-country comparison of housing prices in levels.<sup>(148)</sup> The approach above can thus be complemented by looking at housing prices in level. Based on a database for residential real estate prices per square meter in the EA, one can compute the number of years of income necessary for an average household to purchase a 100 square meter dwelling (Graph IV.13).<sup>(149)</sup> In 2016, in 9 EA Member

<sup>(148)</sup> In addition, the analysis through ratios posits that these are mean-reverting in the long-term, a property which may be difficult to establish for countries with relatively short time series.

<sup>(149)</sup> Bricongne, J.-C., P. Pontuch and A. Turrini (forthcoming), 'Lessons from housing prices in level', *European Economy*, Discussion paper.

States, the average person needed more than 10 years of disposable income to purchase a flat. With few exceptions, and notably the case of Ireland, these countries are also the ones where the other valuation approaches signal potential valuation gaps.

Graph IV.13: **Price-to-income in level (in EUR/sqm, 2015)**



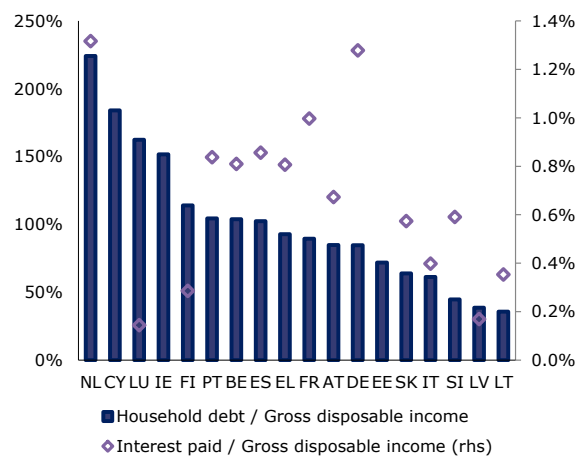
Data is not available for BG, HR, LT, LV, MT and RO  
**Source:** European Commission, "Assessment of the housing markets outlook: new insights from house prices in levels", in European Commission (2016), European Economic Forecast – Winter 2016, European Economy.

The possible consequences of a downturn in housing price cycles depend on the strength of households' balance sheets and on the health of the financial sector. The level of household debt is thus an important qualifier when assessing the risks related to the housing cycle. High household debt or high interest burdens make households more vulnerable to a correction in the housing market. The incidence of variable-rate mortgages also needs to be taken into account. In countries where a significant share of loans are with variable rates, as is the case for example in Cyprus, a hike in interest rates could prompt a drop in demand for housing. Accordingly, in the warning addressed by the European Systemic Risk Board (ESRB) to eight Member States on vulnerabilities in the residential real estate sector, it focused on countries with high valuation risks but also to countries, such as Finland or the Netherlands, where valuation risks appear limited but where the financial situation of household would make them vulnerable to a shock to the housing sector (Graph IV.14). By comparison, the group of countries with "catching-up" housing markets show limited household indebtedness, suggesting that the impact of a

potential shock on housing prices would be limited.

The situation of the banking sector, and its ability to weather potential shock, is also an important qualified of risks on the housing market. After several years of depressed profitability in the banking sector, notably due to the need to strengthen capital, the resilience of banks in the EA appears to have improved. In most countries, banks record positive return on equity and the level of non-performing loans are decreasing.

Graph IV.14: **Household debt and interest burden, 2016**



Household gross disposable income is not available for Malta.  
**Source:** European Commission.

#### IV.5. Conclusion and policy implications

Before the global financial crisis, countries in the EU experienced an exceptionally long and strong expansion in house prices. Most Member States participated in a housing boom which brought house prices to record levels. This homogenous hike crumbled after the global financial crisis and housing markets in the euro area followed diverging paths. Most Member States experienced a phase of correction, which lasted between two to six years, and prices then started to recover on the back of the general improvement in the economic situation. In some countries, the protracted deterioration in economic fundamentals has resulted in ever decreasing house prices, to levels that are well-below fundamentals. Finally, some Member States have experienced ever higher house prices hand in hand with still increasing household indebtedness irrespective of the crisis.

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The acceleration in house prices in a number of Member States both in the EU and in the EA, notably in the Nordics and in Central Eastern Europe, raises question on the medium-term developments. Indeed, the magnitude of the correction in real house prices has generally remained below the one observed in previous bust episodes, suggesting that further adjustments are possible. Taking into account the uncertainties surrounding the use of valuation metrics, valuation gaps for most of the euro area seem to dispel the view that prices are set to adjust further. In the countries where house prices have rebounded after a correction following the 2008 crisis, valuation metrics generally suggests that risks of downward adjustments are limited. Data on construction activity and on mortgage also signal that housing markets are at an early stage of recovery. Still, in a number of them, including Ireland, Cyprus, Luxembourg, the Netherland and Finland, household debt is well above their gross disposable income. This means that a correction in housing prices would translate into stress on households' balance sheets, with possibly large implications on economic growth. By contrast, in some Member States no or only minor adjustments in prices have occurred and the various valuation metrics all point toward significant risks of over-valuation. This is notably the case for Luxembourg and, to a lesser extent, for Belgium and Austria where price developments need to be adequately monitored. Finally, the abrupt acceleration in house prices seen in some Member States, notably Latvia, Slovakia and, outside the euro area, Bulgaria, the Czech Republic, Hungary and Romania, marks the beginning of a new housing cycle and risks of a correction in prices appears contained at the current juncture. In light of the aggregate household balance sheet, the macro-economic risks also appear limited. Still, if the current dynamics were to be sustained, risks could build up over the coming years and the potential formation of a housing bubble and the accompanying distortions should be avoided.

Housing market outcomes are shaped by a broad range of national policies. Macro-prudential policies, rental market regulations, taxation and zoning are the main broad categories that influence the supply and demand for housing. Due to the close relationship between housing prices and mortgage developments, macro-prudential measures, which are aimed towards financial stability by avoiding excessive risk taking by banks on the mortgage market, have a profound impact

on the housing market. In light of the systemic risks linked to developments in the residential real estate market, the ESRB issued warnings to eight EU Member States, out of which five in the euro area.<sup>(150)</sup> Since then, measures to limit the loan-to-value ratio have notably been introduced in Austria, Finland and Netherlands. Action has also been taken to limit risky lending practices and strengthen the capital buffer of banking institutions.<sup>(151)</sup> The way the rental market operates also has deep implications on housing prices. A high degree of rent control, such as for instance in Austria and Germany, while pursuing social objectives, can contribute to a home ownership bias with adverse effect on housing price dynamics. Regarding the tax system, more than one-third of the Member States subsidise mortgage debt financing, notably through mortgage interest deductibility. Such measures tend to favour home-ownership and favour high-income households. They have been reduced or abandoned in most Member States. Mortgage interest deductibility remains high in some countries, including Belgium and the Netherlands. Finally, restrictions to the supply of housing contribute to house price volatility. While relaxing zoning regulations in a context of accelerating housing prices can help address this issue, deregulation may lead to excessive diversion of resources towards construction.<sup>(152)</sup>

Overall, the discrepancy between the situations in the housing cycle in the euro area calls for differentiated policy responses across the various Member States. Policy action should reflect both the magnitude and the nature of the risks in the various Member States. The strength of economic and financial linkages within the euro area mean that the bursting of imbalances, notably linked to real estate, in one country can generate significant spill-overs to the others. Such concerns are at the core of the oversight conducted by the ESRB and the European Commission, notably through the Macroeconomic Imbalance Procedure. Still, corrective actions mainly reside with national authorities which need to take an inclusive approach at housing market policies.

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<sup>(150)</sup> Austria, Belgium, Denmark, Finland, Luxembourg, Netherlands, Sweden and the United Kingdom.

<sup>(151)</sup> ESRB (2017), A review of macroprudential policy in the EU in 2016, ESRB.

<sup>(152)</sup> Glaeser E., J. Gyourko and A. Saiz (2008), 'Housing supply and housing bubbles', *Journal of Urban Economics*, Vol. 64, pp. 198-217.