Spotting excessive regional house price growth and what to do about it

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Executive summary

Housing bubbles are a well-known source of   nancial instability. In addition, given the importance of this sector to the economy, the collapse of such bubbles tends to be followed by deeper recessions and slower recoveries than other crises, as the recent boom-bust housing cycles in many countries have clearly demonstrated.

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of the countries, warranting more targeted measures at the local level.

We propose to use di   erentiated macroprudential policy at the regional level.   is could be done with the application of di   erent loan-to-value (LTV) or debt-to-income (DTI) limits for mortgages in capital cities and in the rest of the countries, in order to tighten policy more quickly in areas more prone to overheating.   is type of policy has already been successfully applied in Korea. Competent authorities in the EU should consider adding this instrument to their toolkits in order to increase the precision, and therefore the e   ectiveness, of their policies.

This paper is accompanied by an online annex available at: http://bruegel.org/wp-content/uploads/2017/10/Housing-prices-City-vs-Rest-Annex-161017.pdf

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1 Introduction

Rapidly rising house prices are a well-known source of financial instability. When fuelled by credit booms[1], asset price bubbles increase the risk of a financial crisis[2], and the collapse of such bubbles tends to be followed by deeper recessions and slower recoveries. Debt-financed house price bubbles have emerged as a particularly dangerous phenomenon for two reasons. First, mortgages that are not repaid cause losses for the financial system. Second, households in negative equity (ie when the value of the house is lower than the outstanding mortgage) reduce their consumption significantly to rebuild their equity positions. This deepens the economic downturn (Mian, Rao and Sufi, 2013). By the same token, households increase their consumption when house prices are rising. Housing can thus be a strong pro-cyclical force in the economy, as housing boom-bust cycles in Spain and Ireland have made abundantly clear.

The cyclical pattern of house prices is very strong because households, as non-professional investors, mainly base their house price expectations on current price developments, even if these expectations look unrealistic from an ex-$ante$ perspective[3]. Such expectations have a reinforcing effect both when house prices are rising and when they are falling. More remarkably, these price expectations are mainly local: in some cities, house prices might increase, but not in others, as Shiller (2008) shows.

This Policy Contribution examines whether there are regional differences in house price growth within European countries and, if so, whether this warrants more targeted measures to address vulnerabilities[4]. The monitoring of vulnerabilities and potential imbalances in European housing markets is carried out jointly by the European Systemic Risk Board[5] and by national authorities. Their analyses are done mainly at the country level. Though essential, tracking only national indicators means that these analyses might miss imbalances developing within countries. In Denmark, for example, the International Monetary Fund noted the growing divergence of house prices within the country and found evidence of signs of overvaluation in Copenhagen (Chen et al, 2016).

We focus on the division in terms of house prices between the capital cities and the rest of the territories of six EU countries for which there are sufficiently long series of house price indices (HPI) at the regional level. Capital cities are important because they tend to be large and densely populated and because they possess structural (supply-side) characteristics that can amplify the response of prices to shocks. We do not examine the drivers of property prices at the regional level, nor do we set out to identify potential bubbles, which is very difficult in real time. Instead, we calculate indicators that can be used by policymakers to gauge the level of overval-

cycles is the central bank's interest rate, but its effects are felt economy-wide. Moreover, since the creation of the single currency, the euro area has one interest rate for the area as a whole,

Table 1: HPI availability at the regional level, EU countries

	Indices	Prices	Not available
Austria	Finland		

undertaken a comprehensive study assessing the predictive capacity of a set of early-warning indicators (Ferrari, Pirovano and Cornacchia, 2015). In an EU-wide setting, nominal house price growth and price-to-income gaps were ranked among the most reliable early-warning indicators of unsustainable bubbles.

Figure 1 compares **house price developments** in the capitals and the rest of the territory in the six countries of our sample, relative to house prices at the start of the period in each case. Because the HPI data tracks house price growth (not absolute price levels) relative to

Figure 2 shows **year-on-year HPI growth rates** while Table 2 lists some of the descriptive statistics of the HPI growth rates. Higher average price growth in capitals over the longer run suggests that the price differential has structural features, such as persistently higher demand and less-responsive housing supply caused by restricted land supply and/or stricter planning rules in capitals. Interestingly, house prices in capitals also seem to have a stronger cyclical component, with higher upturns and deeper downturns. This stronger cyclical pattern is confirmed by more volatile year-on-year growth rates in capital cities, with the exception of London. As can be seen in Table 2, standard deviations and max/min of the price growth in one year are clearly higher in capital cities than in the rest of the countries.

Figure 2: HPI year-on-year growth rates (%)

Source: Bruegel. Note: See Figure 1.

Table 3: HPI, compound annual growth rates

		Compound annual growth rates			Dates		
		Whole period	Before last trough	After last trough	Whole period: start	Whole period: end	Last trough
DK	Copenhagen	8.8	9.3	7.7	1992q1	2016q4	2009q1
	Rest of Denmark	5.3	5.6	4.3	1992q1	2016q4	2011q4
FI	Helsinki	3.4	3.3	3.1	1988q1	2017q1	2009q1
	Rest of Finland	2.6	3.2	0.9	1988q1	2017q1	2009q1
FR	Paris	5.2	5.6	4.5	1994q4	2016q4	2009q2
	Rest of France	4.2	6.3	0.3	1994q4	2016q4	2009q2
NL	Amsterdam	6.9	6.3	9.8	1995q1	2017q1	2013q1
	Rest of the Netherlands	4.4	4.6	3.4	1995q1	2017q1	2013q2
SE	Stockholm	7.1	7.4	6.5	1987q1	2017q1	2010q4
	Rest of Sweden	5.8	6.1	4.9	1987q1	2017q1	2010q4
UK	London	8.8	8.7	8.7	1995m1	2017m4	2009m4
	Rest of England and Wales	6.7	8.0	4.2	1995m1	2017m4	2009m3

Source: Bruegel. Note: The method for selecting peaks and troughs is based on an algorithm developed b Harding and Pagan (2002) to define business c cles. The user must choose a rule: the shortest possible length for a c cle (time between two peaks) and for a phase (time between a peak and a trough). The algorithm then selects those peaks and troughs that respect the rule. We appl it to HPI levels and set the rule at 12 quarters for the length of the c cle and 3 quarters for the phase. The reason is that periods of declining prices (contraction phases) are generall much shorter than periods of rising prices (e pansion phases). The algorithm does not identif recent troughs for Sweden so we consider the end date of the real estate-related crisis as it appears in Ferrari *et al* (2015). We also ignore the last trough that the algorithm identifies for France, because it appears to be spurious.

Price growth in capital cities thus generally tends to be more volatile and more pro-

accounts, which are published more quickly than the regional data (see notes to Figure 3).

Figure 3 shows price-to-income ratios for the national capital and the rest of each country normalised to 100 at the start of the series. Over time, ratios have generally increased, implying that housing is becoming less affordable for the average household. Longer-term averages could act as a benchmark against which we could compare recent developments or measure a price-to-income gap. However, in most cases here the ratios are not stationary, making averages less useful. The upward trend of the ratios is explained by the fact that real estate-related financial crises took place at the beginning of the 1990s in most of the countries in our sample. The series for Denmark and Finland begin in 2000, resulting in relatively more stable price-to-income ratios when capital cities are excluded.

Figure 3: Price-to-income ratios, beginning of period = 100

Source: Bruegel. Note: Price-to-income ratios are obtained b dividing the HPI snatiosIce-tadable for the avIuded.h1 (a(a) e)1 (Iude)-3 (d.)TETEMC /Span /Lang (a

were increasing in all of the countries in our sample. Moreover, relative differences in affordability between regions were present but were not extreme. In relative terms, in Denmark, Finland, the Netherlands and Sweden, housing in the capital was becoming less affordable compared to the rest of the country before the crisis, whereas in France and the UK the opposite was the case. However, during the global financial crisis and its aftermath, price-to-income ratios in the rest of the country in each case stalled or fell, while in capital cities they continued increasing either modestly (Helsinki, Ile-de-France) or sharply.

As with price growth, recent developments in price-to-income ratios point to growing divergences and strong growth in capital cities. Affordability has decreased in capital cities with the ratio for capital cities at or above its historical peak in all our sample countries. This contrasts with relatively stable price-to-income ratios in areas outside the capitals in recent years. However, in some countries price-to-income ratios are also rising outside the capital, pointing to the need for vigilance at the national level as well. In Sweden, for example, the ratio for the country outside Stockholm reached in 2016 its maximum value in the last two decades. The price-to-income ratio was also approaching past peaks in England and Wales outside London. But even in these two cases, there is evidence of a decoupling between capitals and the rest of the country.

Persistently decreasing affordability in capital cities is relevant for financial stability, to the extent that it could lead households in capitals to become excessively leveraged, thereby bringing into question their ability to service their debts in case of shocks (such as changes in interest rates or income levels). These diverging trends in affordability between parts of countries calls for a differentiated approach in instruments. We consider this possibility in the remainder of this paper.

4 Policy options and concluding remarks

Capital cities are different. It is clear that their more rapidly rising house prices are partly related to structural factors. These include faster population growth than areas outside the capitals, which is related to movement of labour from the provincial areas to the main cities and migration (migrants tend to concentrate in the most-populated urban areas). These movements might be spurred by the rise of new services and digital companies. These firms typically base themselves in larger cities (with good airport connections and good 'lifestyle' facilities), whereas industrial companies are typically more spread out over the country. Combined with a shortage of new homes in the capital cities, the extra demand leads to price rises if the supply is not elastic, which is often the case in capital cities which are already densely built-up and where planning restrictions are often stricter than in the countryside. Some of these restrictions could be relaxed to reduce the supply constraint, but, as our results show, house prices in capitals are also more volatile than in other areas. Structural measures by themselves might not be enough to moderate house price cycles in capital cities. Macroprudential measures appear to be more adequate to tackle the cyclical nature of the problem. However, are policies based on national house price indices appropriate for dealing with the specific overly-cyclical pattern of capital cities?

In November 2016, the European Systemic Risk Board issued warnings to five of the six countries in our sample (France was the exception) and to an additional three (Austria, Belgium and Luxembourg) on the basis of systemic risks stemming from their residential real estate sectors in the medium term. The sources of the vulnerabilities in these five cases were the combination of high household indebtedness and potentially risky price dynamics. Concern about rapidly growing and overvalued prices was voiced in particular for Sweden, Denmark and the UK. The analyses underlying these warnings highlighted the divergence in prices between parts of each country, for instance in Denmark. The European

Commission, the International Monetary Fund and the Organisation for Economic Cooper-

ments) must not exceed one-third of the borrower's gross income (Haut Conseil de Stabilité Financière, 2017).

4.2 Policy options

All the policies described in section 4.1 (except in Denmark) are implemented at the national level and do not take into account divergences between capital cities and the rest of the countries in our sample. National policies, based on average house price growth, can be too blunt to dampen excessive house price growth in capital cities, and too tight for the rest of the country where house price growth is subdued. This could be tackled through taxes or structural measures, but these would require a long lead-time and would play out over the long term. Instead, a differentiated macroprudential policy could be implemented through different LTV or DTI ratios for mortgages in capital cities and in the rest of the countries. But where and when should these measures be applied?

Where to differentiate

The first step would be to determine whether there are significant differences between capital cities and the rest of a country. If this were the case, a differentiated approach would be warranted.

One country that already does this is Korea, which 15 years ago put in place a differentiated application of LTV and DTI ratios according to zip-codes, in order to tighten policy more quickly in areas more prone to overheating. In areas considered 'bubble-prone', the Korean Financial Services Commission implements tighter LTV ratios, regardless of types of housing, or the amount and maturity of new mortgages. LTV ratios are relaxed for first-time buyers and low-income households (Financial Services Commission, 2017).

An area is designated as a 'speculative zone' where special measures might be required if both the following two criteria are satisfied (Igan and Kang, 2011):

- The monthly HPI rose more by than 1.3 times the nationwide CPI inflation rate during the previous month;
- Either (i) the average house price growth rate in the previous two months was more than 1.3 times the average national rate in the previous two months, or (ii) the average of the month-on-month house price growth rates over the previous year was higher than the average of the month-on-month national rate over the previous three years.

Since 2002, the Korean authorities have imposed tighter limits on LTV and DTI ratios in specific areas on several occasions, and have succeeded in taming local house price booms, in terms of both prices and number of transactions (Igan and Kang, 2011).

A similar framework could be applied in EU countries to prevent overheating of local housing markets and its consequences. Applying the criteria used in Korea to the six countries in our sample shows that the capital city in each case would qualify as a 'speculative zone' most of the time, especially in periods of rising prices. Figure 4 shows the periods (shaded grey) during which the criteria used in Korea would have been fulfilled and capital cities would have been considered 'speculative zones'.

When to differentiate

With these criteria in place, the second step would be to monitor house prices at the regional level to decide when to tighten or to loosen the policies. When house price growth is considered to be excessive in a particular region, the responsible authority would impose measures or explain why measures are not taken[14].

However, it is difficult to set a specific house price growth trigger point beyond which

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action might be taken, in contrast to consumer price index inflation in monetary policy (Ingves, 2017). For the responsible authority, it is hard to know what constitutes the correct price growth rate at a given time, because house prices are determined by a range of different factors that are both cyclical and structural in nature. Indicators are therefore necessary to know when to take action, as house prices are very important for financial stability.

Figure 4: Designation of 'speculative areas', six EU countries

Source: Bruegel. Note: Shaded areas indicate the periods during which capital cities in the sample countries would be designated 'speculative areas' based on the criteria used in Korea. The criteria have been adjusted to accommodate the quarterl frequenc of the HI (terl9 seouldthe (al and s)28

Box 1: HPI in other countries

While at least twenty years of regional house price data is available for the six countries of our sample, ten years of regional data is available for another four EU countries (Figure 5).

Figure 5: HPI, index levels (left panels) and annual growth rates (right panels) in Austria, Greece, Ireland and Lithuania
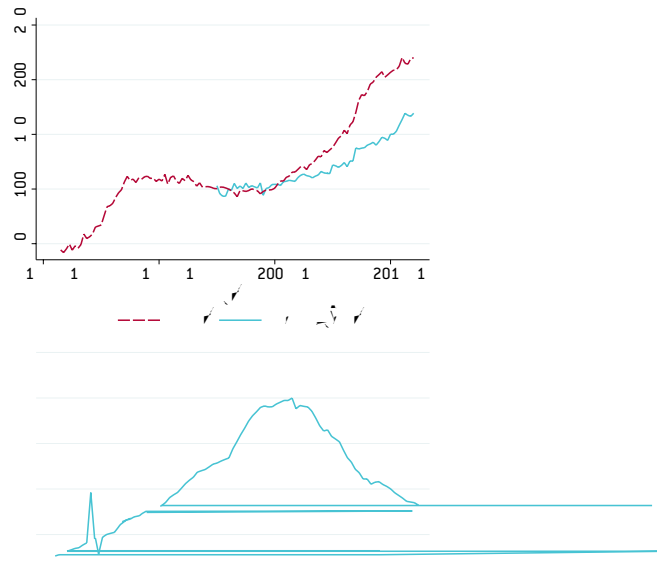
Source: Bruegel. Note: The HPI for Greece is limited to apartments and the 'rest of Greece' to urban areas other than Athens. The shaded areas represent periods of real estate-related banking crisis (see note to Figure 1).

For the largest EU economy, Germany, detailed house price data at the regional level is not readily available. e Bundesbank publishes an HPI broken down in terms of geography into: seven large cities (Berlin, Cologne, Dusseldorf, Frankfurt (Main), Hamburg, Munich and Stutt-gart), 127 cities (the seven large cities plus another 120 cities) and the national aggregate. Figure 6

References

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European Systemic Risk Board (2015) *Re   Re de   a Rea E   a e a   d F   a c a S ab   e EU*

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