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EUROSYSTEM

Housing markets – squaring supply and demand



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Housing demand/supply: 8 reasons for the mismatch

1. Demand concentrated geographically

Jobs, amenities and migration (in some countries) raise demand in cities faster than local supply.

Banco de España (2024), Annual Report 2023, Ch. 4

2. Household needs change

Smaller households and ageing increase dwelling needs and alter the required mix.

Cousin et al. (2025), European Economy DP 228

3. Planning constrains supply

Zoning, density limits and approval delays restrict construction where demand rises.

Hilber & Vermeulen (2016), Economic Journal

4. Infrastructure and capacity fall short

Limited serviced land, labour shortages and weak productivity delay building.

Central Bank of Ireland (2024), Quarterly Bulletin 3

5. Development becomes less viable

Higher building and financing costs squeeze projects despite unmet housing needs.

Cousin et al. (2025), European Economy DP 228

6. Existing homes are unavailable

Vacancy, seasonal use and tourist rentals reduce supply for permanent residents.

Batista et al. (2025), JRC, Place-based determinants

7. Institutions impede allocation

Transaction taxes discourage moving. Housing tax relief can amplify demand.

OECD (2022), Housing Taxation in OECD Countries

8. Affordable rental provision is limited

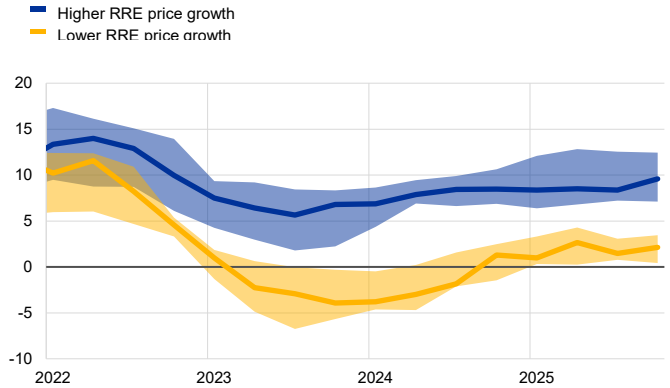
Market housing does not meet all low-income needs. Social rental supply varies widely.

OECD (2026), Tackling the affordability gap

Demand/Supply=> Prices; diverging developments in euro area housing markets: policy considerations from the financial stability perspective

- We need to understand the developments and risks before we can discuss the policy
- Recently residential real estate price growth has diverged significantly across the euro area (strong house price growth in some countries vs more subdued house price dynamics in other countries) - why are factors underlying this variation worth analysing?

One-year nominal residential real estate price growth
(Q4 2021-Q4 2025, percentages)



Sources: ECB and ECB calculation.

Notes: all euro area countries are split into two groups, depending on whether they are above or below the median one-year nominal residential real estate (RRE) price growth rate in Q4 2025 of the country sample used in BVAR on the next slide (for consistency). As a result, one-third of countries are in the lower RRE price growth category and two-thirds in the higher category. The solid lines depict the median for each group of countries, while the shaded areas around the solid lines represent the interquartile range.

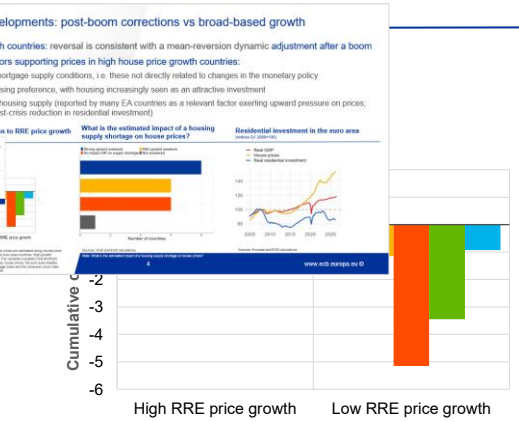
1. Strong house price growth does not always reflect the same vulnerabilities - credit-driven price growth warrants the closest attention
2. Understanding the drivers informs policy-making:
    1. Effectiveness of policy measures (including borrower-based measures, BBMs) depends on the channels through which vulnerabilities build up
    2. Policymakers have to decide if macroprudential policy or other housing market measures (e.g. taxation) are the appropriate policy response

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RRE price developments: post-boom corrections vs broad-based growth

- Low RRE growth countries: reversal is consistent with a mean-reversion dynamic adjustment after a boom
- Three main factors supporting prices in high house price growth countries:
  - favourable mortgage supply conditions, i.e. these not directly related to changes in the monetary policy
  - stronger housing preference, with housing increasingly seen as an attractive investment
  - constrained housing supply (reported by many EA countries as a relevant factor exerting upward pressure on prices; related to post-crisis reduction in residential investment)

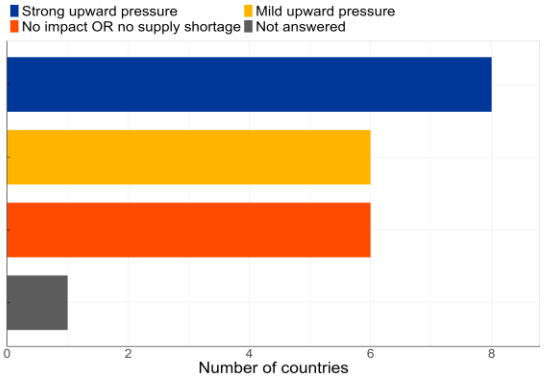
Cumulative contribution to RRE price growth



Sources: ECB and ECB calculations

Note: Averages of cumulative shock contributions to house prices are estimated using country-level Bayesian vector autoregression (BVAR)(2) models for nine euro area countries. High growth countries: IE, ES, NL, PT; low growth: AT, DE, FI, FR, IT. The variables included in the BVAR(2) models are residential investments, real disposable income, house prices, the euro area shadow rate*, lending rate on household loans, outstanding mortgage loans and the consumer price index. The estimation sample covers the period Q1 2003-Q4 2025.

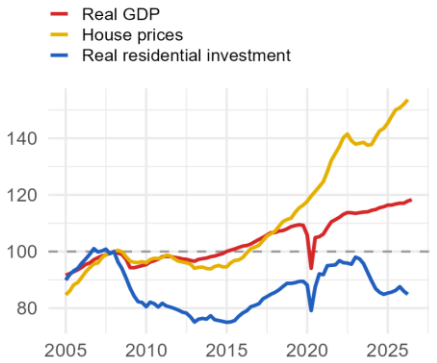
What is the estimated impact of a housing supply shortage on house prices?



Sources: ECB and ECB calculations

Note: What is the estimated impact of a housing supply shortage on house prices?

Residential investment in the euro area
(indices Q1 2008=100)



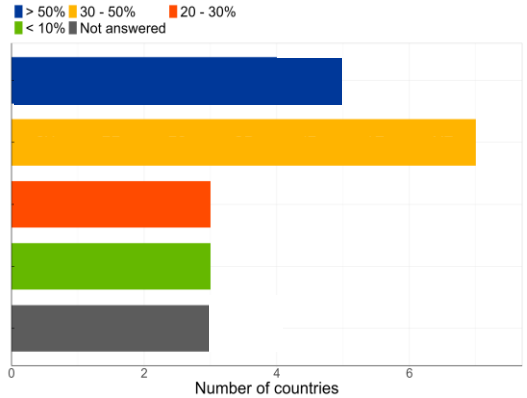
Sources: Eurostat and ECB calculations

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Impact of interest rate hikes on housing prices is affected by house purchase financing

- Shares of non-mortgage house purchases in some EA countries are high, even above 50%, containing cash purchases and demand from abroad
- Such demand will exert an upward pressure on house prices at every phase of the cycle
- Countries with high levels of house purchases not financed by mortgages showed less sensitivity to recent interest rate increases, consistent with the idea that buyers were less affected by changes to mortgage rates

What is the share of housing transactions without mortgage financing?

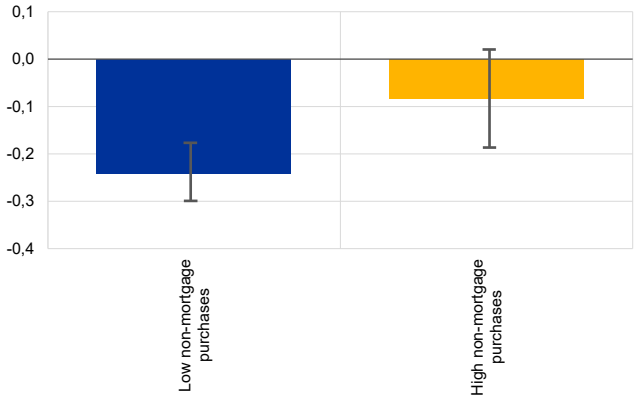


Sources: ECB and ECB calculations

Note: What is the share of transactions without mortgage financing (including both domestic and foreign buyers) in the housing market?

Interest rate elasticity of house prices

(Q4 2021-Q3 2025, elasticity)



Sources: ECB calculations based on Dickelmann et al (2024)

Housing demand/supply: 8 potential policy measures

1. Enable building in high-demand areas

Reform planning and density rules, backed by infrastructure and serviced land.

Central Bank of Ireland (2024), Quarterly Bulletin 3

2. Expand affordable rental housing

Use public land and durable financing for social and limited-profit providers.

OECD (2026), Tackling the affordability gap

3. Mobilise existing homes

Target usable long-term vacancies and tourist-rental pressures in stressed areas.

Segú (2020), Journal of Public Economics

4. Reform housing taxation

Shift from transaction to recurrent property taxes and curb mortgage tax relief.

OECD (2022), Housing Taxation in OECD Countries

5. Calibrate buyer subsidies carefully

Where supply is rigid, buyer support can increase prices with little new building.

Carozzi, Hilber & Yu (2024), Journal of Urban Economics

6. Balance rent protection and supply

Design predictable rules that protect tenants and sustain maintenance and building.

Cousin et al. (2025), European Economy DP 228

7. Preserve macroprudential resilience

Assess ownership and rental effects. Easier credit alone cannot resolve shortages.

ECB (2025), Research Bulletin, 16 January

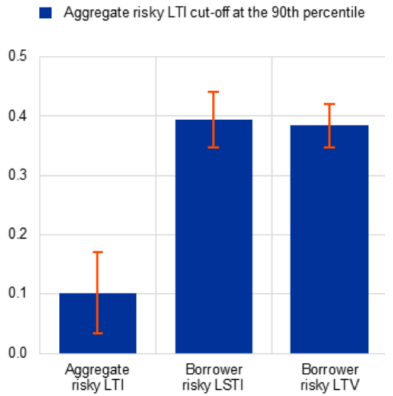
8. Prevent boom/bust cycles

Macroprudential policy can serve the purpose, as construction sector capacity suffers long term.

What does the current situation in EA housing markets mean for macroprudential borrower-based measures? **Could BBMs support housing supply?**

- Some countries activate BBMs with exceptions for new housing hoping this could support supply:
  - New Zealand (exceptions from loan-to-value and debt-to-income limits), Australia (exceptions from debt-to-income limits, carveouts from tax reform), Sweden (optional amortisation exemption for up to 5 years), Canada (30-year instead of 25-year insured mortgage amortisation), Latvia (45% debt-service-to-income instead of 40%, and 8× debt-to-income instead of 6× for energy-efficient purchases)
- While there exist empirical evidence that finance targeted at new homes can increase supply, evidence on the effect of BBMs exemptions on housing supply is missing
- However, these exemptions could lead to a build-up of vulnerabilities stemming from loose lending standards:
  - Loose lending standards heighten the macroeconomic impact of house price shocks on the real economy because they tend to lead to higher indebtedness
  - Adverse effects of loose lending standards on financial stability and the real economy underline the importance of well-designed macroprudential policies for mitigating aggregate risks

Impact of lending standards (individual and aggregate) on the probability of mortgage default (percentage points)

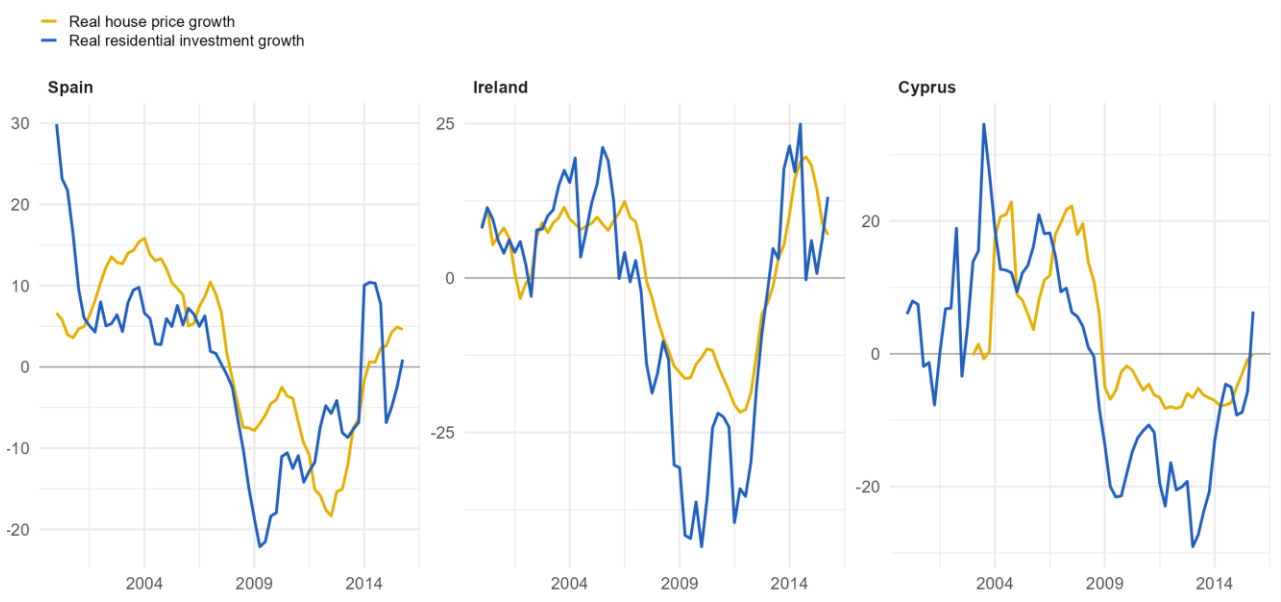


Sources: ECB and ECB calculations from De Nora et al (2025)

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Boom/bust cycle destroying construction activity (ca 6 years negative growth rates)

Residential investment and house price development in selected countries
(Q1 2000-Q4 2015, year-on-year changes in %)



Sources: ECB calculations and Eurostat, BIS

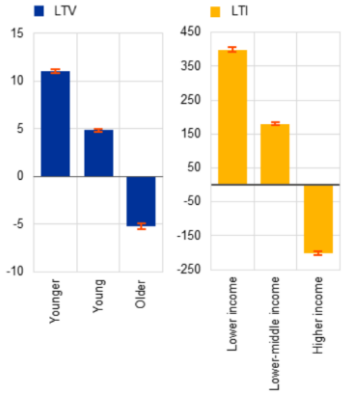
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What does the current situation in EA housing markets mean for macroprudential borrower-based measures? **BBMs are politically problematic in a situation of already elevated house prices, but…**

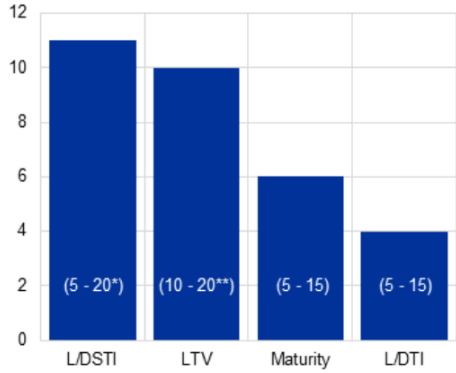
- There exists literature that shows that borrower-based measures tend to exert a downward pressure on credit and house prices – although effect on prices could be weak
- Affordability to purchase property vs access to mortgage markets vs BBMs?
  - In the beginning, BBMs may reduce access to the housing market to a certain fraction of the population (but no impact on *affordability*):
    - However, borrowers affected by BBMs are those who may otherwise get a large loan in relation to their income and/or property price – possibly leading to repayment challenges
    - In an adverse scenario, access to mortgage market for these borrowers may turn out utility decreasing
    - At the same time, careful BBM design limits excessive reduction of access to mortgage markets
  - Over time as BBMs are in place, the *affordability* can improve via lower house prices
  - While the main goal of increased resilience materialises

Flexibility elements can improve the balance between risk mitigation and access to credit markets throughout the cycle

a) Lending standards by age and income cohorts



b) Number of countries implementing BBM exemptions



Sources: ECB, European Data Warehouse, Macroprudential Database, from Durante at all (2025)

Note: Unit of chart a) left-hand panel: percentage point differences, right-hand panel: percentages; unit of chart b) number of countries; figures indicate the range of exemption calibration in %.

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What does the current situation in EA housing markets mean for macroprudential borrower-based measures? **Are they needed when a supply shortage drives a house price boom?**

- From the financial stability perspective a credit-fuelled housing market boom is the most worrying (as established in the literature, e.g. by Shularick and Taylor (2012)) – so non-credit fuelled, supply shortage-driven booms with sound lemding standards are somewhat reassuring
- However, borrowers who obtain mortgage lending to purchase overvalued property are still exposed to losses if prices correct in case the supply shortage is addressed.
- Even if credit is not exuberant, even when cash/foreign purchases are high – BBMs are important to ensure resilience of the pool of domestic borrowers. Thus lending standards need to be monitored. BBMs as guardrails should prevent lending standards from deteriorating. While exemption quotas should allow banks to address social concerns.
- BUT supply shortage requires measures directly addressing the root problem, see slide 6. Some of them require government spending.
- Macroprudential policy can contain unhealthy demand excesses, as long as national institutional frameworks allow this. Evidence that government roles in frameworks reduce likelihood and stance of BBMs.

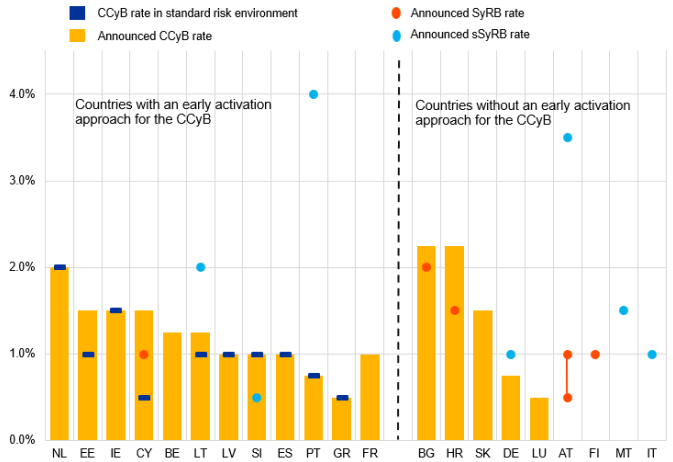
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BACKGROUND SLIDES

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Existing capital and borrower based measures in the euro area

Implemented and announced buffer rates
(% of RWA)



Sources: National authorities
Notes: Does not include CCoB and O-SII buffers. BE and FR do not set a target PN CCyB, but rather have implemented an early activation framework. CY has implemented a floor rate for its PNR, while NL, EE, IE, LT, LV, SI, PT, ES and GR have in place a target PNR rate. The announced CCyB rate will become effective in 2026 for GR and ES, and in 2027 for HR, BG and LT. For other countries it is already effective. CY has announced a new SyRB of 1%, effective from 2026, while BG has reduced its SyRB to 2%, also effective from 2026. In AT, the SyRB rate is institution specific and varies between 0.5% and 1%. SI has applied sectoral SyRBs of 0.5% to loans granted to households. In IT, the 1% sSyRB applies to domestic credit and counterparty credit risk exposures. In all other countries, the sSyRB applies to exposures secured by RRE.

Implemented and announced BBMs across countries

BBMs		AT *	BE *	BG	CY	DE	EE	ES	FI *	FR	GR	HR	IE	IT	LT	LU	LV	MT	NL	PT *	SI *	SK
LTV	*FTB*	90%	90%	85%	80%		85%		95%		90%	90%	90%		90%	100%	90%	90%	100%	90%	80%	90%
	SSB				70%						80%		90%		70%	90%		75%		80%	70%	70%
LTV exemption	*FTB*	20%	35%	5%			15%				10%	10%	15%			0%	10%	10%				5%
	SSB		20%										15%			15%		20%				
DSTI/LSTI	*FTB*	40%	50%	50%	80%		50%		60%	35%	50%	45%			50%		40%	40%	30%	45%	50%	60%
	SSB										40%											
DSTI/LSTI exemption	*FTB*	20%	5%	5%			15%		15%	20%	10%	10%			5%		10%			10%	3%	5%
	SSB																					
DTI/LTI	*FTB*		9										4				6					3-8
	SSB												3.5									
DTI/LTI exemption	*FTB*		5%										15%				10%					5%
	SSB												15%									
Maturity	*FTB*	35 y		30 y			30 y		30 y	25 y		30 y			30 y		30 y	40 y	30 y	35y-40y		30 y
	SSB																	25 y				
Maturity exemption	*FTB*	20%		5%			15%		10%	20%							10%					10%
	SSB																					

All types of borrowers
First-Time Buyer (FTB)
Second and Subsequent Buyer (SSB)
Non-legally binding measure

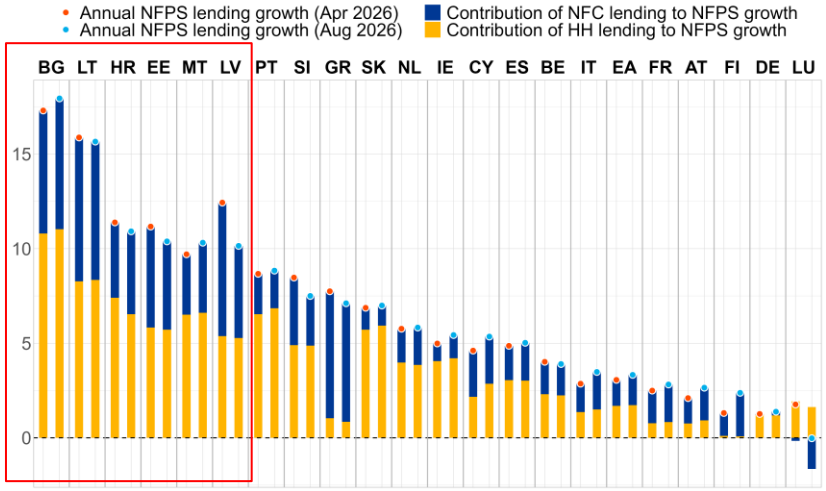
Sources: ECB, National Authorities.

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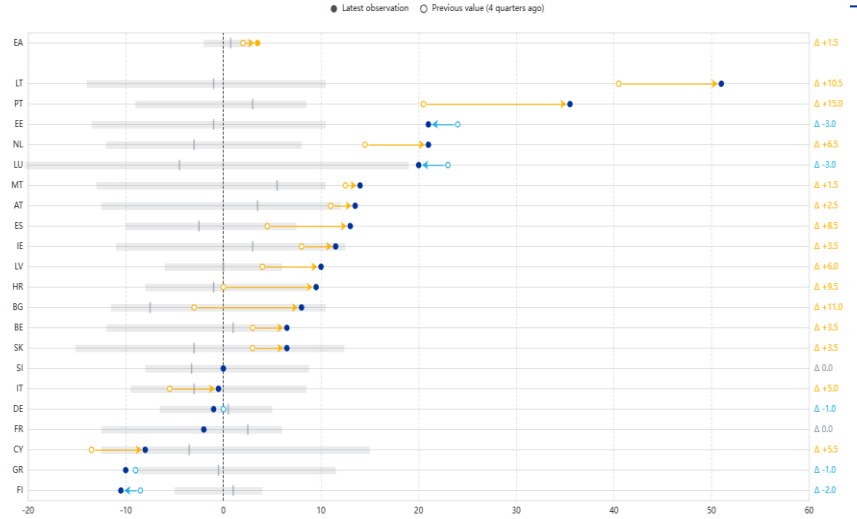
High bank credit growth and high overvaluation in some countries

- Bank credit growth above 10% in BG, LT, HR, EE, MT, LV
- Persistent RRE price increases led to overvaluation in some countries (LT, PT, EE, NL, LU, MT)

Bank loan growth to the non-financial private sector
(percentage points)



RRE overvaluation estimates across countries
(percent, gray bars indicate historical IQR and median)



Notes Right: latest data point is for 2026 Q1. Overvaluation measure is the average of the price-to-income ratio and econometric model estimate.

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Countries differ on a number of structural factors shaping the RRE market

- These and other market-specific traits shape the impact of interest rate changes and the evolution of RRE prices

Structural features of RRE markets across countries

Country	Non-mortgage purchases	ARM	LTV limit	House price overvaluation	Home ownership rate
BE	<10	9	90	lower	70
BG	20-30	97	85	lower	86
DE		11	0	higher	47
EE	30-50	94	85	lower	79
IE	30-50	46	90	lower	69
GR	30-50	72	90	lower	70
ES	30-50	53	0	lower	74
FR	20-30	5	0	lower	61
HR	>50	42	90	lower	91
IT	>50	35	0	lower	76
CY	30-50	79	80	lower	69
LV	>50	86	90	lower	84
LT	30-50	85	85	lower	87
LU	<10	44	100	higher	64
MT	30-50	81	90	lower	68
NL	20-30	11	100	higher	69
AT	<10	42	90	higher	55
PT	>50	67	90	lower	73
SI		22	80	lower	75
SK	>50	13	80	higher	93
FI		95	95	lower	68

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Borrower-based measures cost the young but benefit households later in life

Banco de España agent-based model of the Spanish housing market: long-run effects of borrower-based measures by age

Four channels drive the life-cycle pattern

1 Credit access *cost, mostly under 35*

Limits weigh most on young first-time buyers with little wealth and low income: they save and rent for longer and consume less.

2 House prices *market-wide effect*

Less leveraged demand lowers house prices and dampens booms and busts.

3 Debt burden *gain, 35 and over*

Later buyers pay lower prices and borrow less relative to income: lower debt service, higher consumption from age 35 on.

4 Rental spillover *side effect*

Displaced demand moves to renting: home ownership falls, rents rise, buy-to-let investors absorb part of the stock.

Long-run effect compared with no BBMs, by age

Households that postpone buying enter later, at lower prices and with less debt
→
baseline without BBMs

35 and over
↑ consumption
↓ debt and debt service
↓ house prices paid

Under 35
↓ consumption, ↑ saving
↑ rent paid
home purchase delayed

age of household

Why the logic applies beyond Spain

- LTV limits weigh most on the young, who have low wealth and income
- The size of the later gain depends on how far prices adjust
- Denmark: a model of the same family finds the same pattern – first-time buyers enter later, but welfare rises
- Ireland: a life-cycle model finds the same pattern – young households lose and older ones gain

Sources: Banco de España, Financial Stability Report Spring 2026, Section 6.3, Figures 6.2–6.3 and FSR presentation (14 May 2026), based on the agent-based model of Carro (2023), J. Economic Dynamics & Control 156 (BdE WP 2230); Nissen et al. (2023), SUERF Policy Brief 519; Cokayne et al. (2024), J. Financial Stability 71; Castellanos, Hannon & Paz-Pardo (2026), BoE Staff Working Paper 1,213. Directions only: BdE has not published magnitudes; results preliminary.

BVAR model used to analyse differences in factors driving prices across countries

- We consider individual Bayesian VAR models for 9 euro area countries, assigned to two subgroups based on whether they are above or below the median value of the current RRE price growth rate: high growth countries: IE, ES, NL, PT; low growth: AT, DE, FI, FR, IT
- Model Specification: Residential Investments, house prices, EA shadow rate (Krippner), lending rate on household loans, mortgage loans (stock), CPI, real disposable income. Sample: 2003q1 – 2025q4. Shock identification: sign restrictions.

Sign Restrictions on Impulse Responses

\+ Positive restriction – Negative restriction 0 Zero restriction · Unrestricted

Variable	Housing Supply	Housing Preference	Income	Mortgage Supply	Monetary Policy
Residential Investment	–	0	·	0	0
House Prices	+	+	·	+	+
Mortgage Loans	·	+	·	+	+
Shadow Rate	0	0	0	0	–
Lending Rate	·	+	·	–	–
Real Disposable Income	0	0	+	0	0
Consumer Price Index	·	·	·	·	+

Columns represent structural shocks; rows represent endogenous variables. Restrictions apply on impact.

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Asset pricing model for house prices to test impact of RRE market characteristics on interest rate elasticity of house prices since interest rates started increasing

The equation is derived from the standard asset pricing model which links real house prices to the present discounted value of future rental income streams, following Dickelmann et al (2024) and narrowing down on the period since the interest rates hiked (Q4 2021 – Q3 2025):

$$\log(P_{jt}) = \alpha_j + \beta_0 + \beta_1 \log\left(i^e_{jt} + 5\%\right) + \beta_2 \log\left(i^e_{jt} + 5\%\right) * D_j + \beta_3 \log\left(R_{jt}\right) + \gamma' C_{jt} + \epsilon_{jt}$$

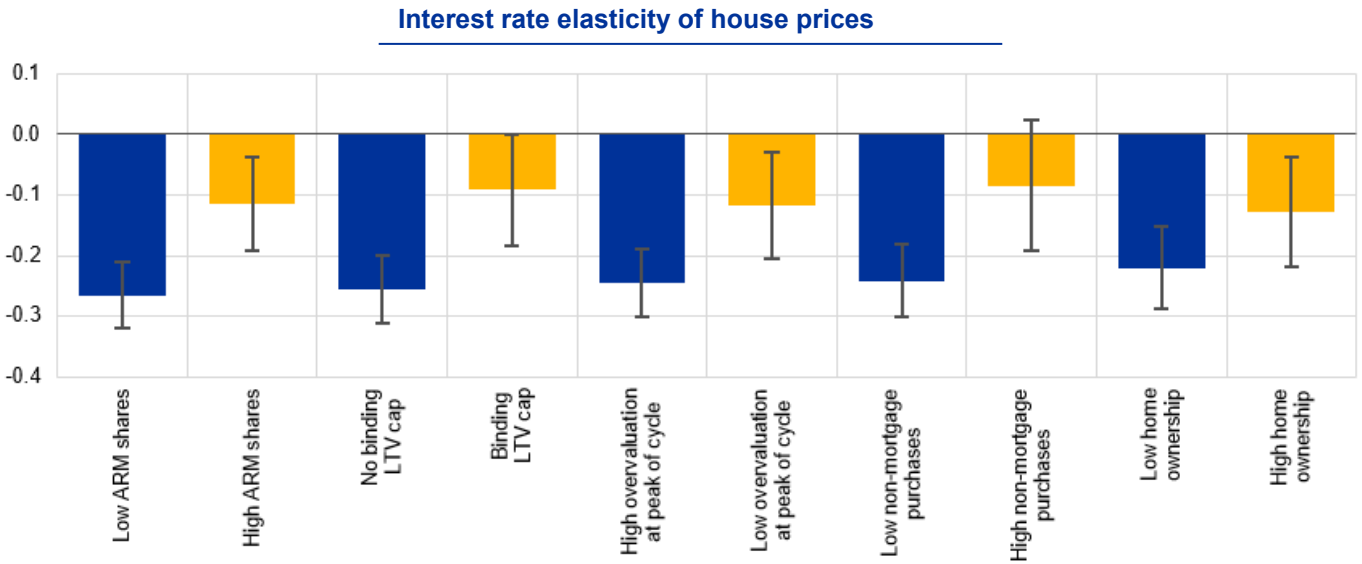
- P_{jt} are real RRE prices in country *j* and time *t*; R_{jt} are real RRE rents in country *j* and time *t*
- i^e_{jt} is the country-specific real household cost of borrowing; + 5% is computed as a difference between the constant risk premium of 6% minus the long-term real rent growth of 1%
- C_{jt} are demand and supply side control variables; α_j are country fixed effects
- D_j are dummies related to structural features

We analyse differences in interest rate elasticity of house prices between groups of countries differing wrt characteristics (prevalence of cash purchases; tax incentives to purchase RRE; high RRE overvaluation pre-hike, supply shortage of RRE; existence of LTV caps; mortgage rate regime):

$$\beta_1 \text{ vs } \beta_1 + \beta_2$$

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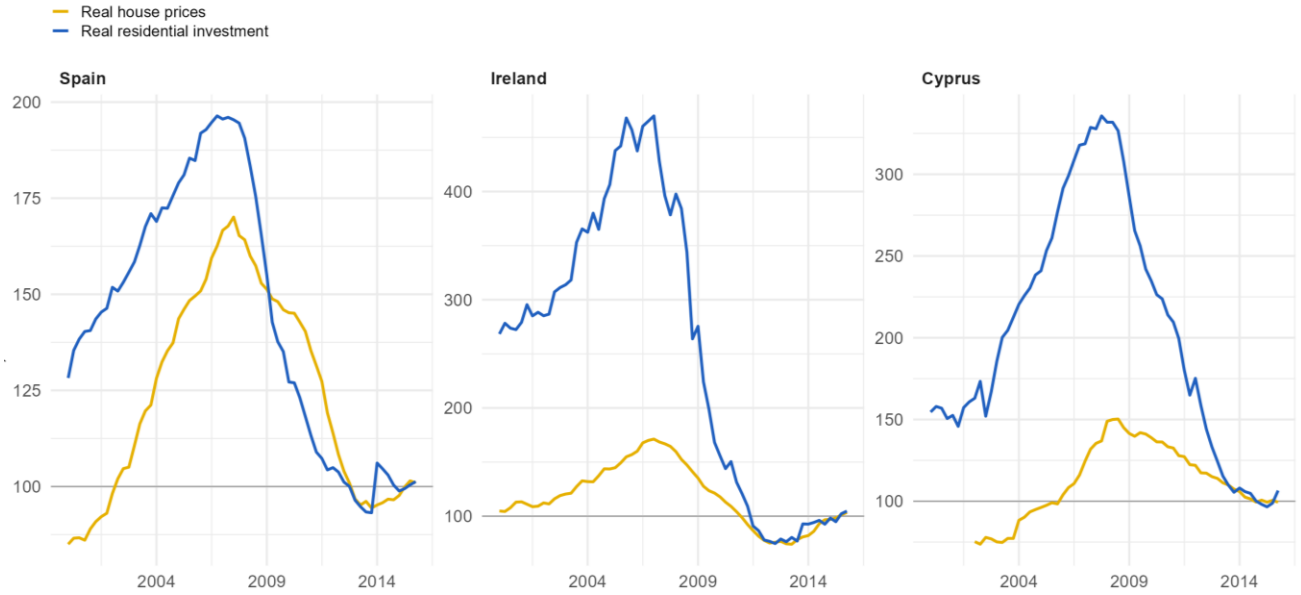
Asset pricing model for house prices to test impact of RRE market characteristics on interest rate elasticity of house prices since interest rates started increasing



Sources: ECB calculations based on Dickelmann et al (2024)

Development of real house prices and real investment over the boom-bust cycle: index

Residential investment and house price development in selected countries
(Q1 2000-Q4 2015, Index, 100 = 2015



Sources: ECB calculations and Eurostat, BIS

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