

How should we measure residential property prices to inform policy makers?

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Structure of the presentation

1. Motivation and introduction
2. Composite indicators
3. The Bundesbank's dashboard
4. Spatial dependencies

“Real estate prices (residential and commercial)” (Recommendation 19 of the G20 Data Gaps Initiative)

1. Motivation and introduction

- Four stylised facts about the **German residential property market**:
 - About **every third euro spent** in Germany for private consumption purposes is spent **on housing**, including imputed rentals for homeowners.
 - Owner-occupied properties constitute the most significant asset of German households; the **rate of home ownership in Germany equates to just 44 %**.
 - Hence, more than half of the German households are renters. **Among the homeowners, two out of five have a mortgage.**
 - The value of the property stock is an important part of the wealth of the German economy: **gross fixed assets in housing stand at 265 % of GDP.**

1. Motivation and introduction

- The **various motivations for the analysis of house prices** call for **alternative measures** to be applied.
 - **Macroeconomic**: identification of price signals, evaluation of monetary policy channels, volume measurement in National Accounts.
 - **Macroprudential**: assessment of asset price bubbles, build-up of risks in banks' credit exposures, financial soundness of private households.
 - However, these **indicators** can give **different results**, which could **undermine their credibility for many users**.
 - Yet, there should be **no unique indicator**. In order to determine whether threats to the economy or financial stability emanate from the housing market, the **analyses should be based on a broad set of indicators**.

1. Motivation and introduction

- The **diverse uses and associated methods of residential property price indices**, the **statistical framework for the compilation of such indices**, as well as a **dashboard comprising the three dimensions price, financial and real sector variables** will be discussed.
 1. **Price and valuation indicators**: E.g. price-to-rent, price-to-income and annuity-to-income ratios.
 2. **Loans to and debt of households**: E.g. banks' loans and interest payments.
 3. **Construction and activity indicators**: E.g. completed housing units and transactions.
- Empirical results for the German residential property market will exemplify the **usefulness of a multi-indicator approach** in times of strong upward movements of price indicators.

2. Composite indicators

- **Composite indicators**, on the other hand, aim to combine **numerous, diverse indicators** in a **single number**.
- They claim to **reduce complex relationships** to a **supposedly simple measure**.
- For aggregating base variables to a composite indicators one has to **select suitable data** first and, then, to **derive the respective weights**.
- It is **not straightforward at all** how the **selection and weighting** of the base variables should be performed:
 - **Factor analysis** maximises the explained variance of all base variables, the **thus derived weights do not**, however, **represent relative importance**.
 - **Regression analysis** minimises squared error to a **given target indicator**, whose existence makes the **whole exercise somewhat obsolete**.

2. Composite indicators

- Hence, **generally accepted and obvious selection procedures** as well as **weighting schemes cannot possibly exist.**
- One composite indicator could use **different base variables** than another one; a third one could use the same base variables but apply a **different weighting scheme.**
- What is more, a **composite indicator suggests substitutability** between different base variables such that one would be **indifferent between certain combinations.**
- When the **composite indicator is not constructed adequately** or is **not used so**, the **conclusions derived** on that basis might be **misleading and costly.**
- Particularly with **many base variables**, their **interpretation** will be **in conflict.**

2. Composite indicators

- The high dimensionality of a **complex and diffuse phenomenon** such as „**the residential property market**“ cannot adequately be reproduced by a **composite indicator**.
- Quite the contrary, the **joint distribution of price, financial and real economic indicators** seems to be at the centre of the current discussion.
- There is **no simple answer** to a **complicated question**; it might, thus, be better to **look at a dashboard of indicators** rather than to **dissolve existing conflicts** between base variables.
- Last but not least, **statistics has a consulting function for policy makers** – this makes it **even more important to produce unbiased, easily interpretable and manageable measures**.

3. The Bundesbank's dashboard

- The **year 2010** saw a **trend reversal in the German housing market**, which was reflected in a **sharp rise in prices**.
- This situation needs to be addressed in light of the **ongoing low-interest-rate environment**.
- In order to determine whether **threats to the economy or financial stability** emanate from the housing market, the Bundesbank based its analyses on a **broad set of indicators**.
- This clearly shows that **no statistical one-size-fits-all approach** exists but that each subject matter has to be considered separately.

3. The Bundesbank's dashboard

System of indicators for residential property markets

Price indicators

- Residential property prices in Germany
- Price indices for rental housing in Germany
- Standard indicators to evaluate residential property prices in Germany
- Price-to-rent ratio for apartments in Germany
- Rent for apartments in Germany

Financial indicators

- Dynamics in domestic banks' loans for house purchase
- Stock of domestic banks' loans for house purchase
- Debt of households in Germany
- Changes in credit standards and margins on loans to households in Germany for house purchase
- Interest payments on loans to households in Germany for house purchase
- Interest rates on loans to households in Germany for house purchase
- Fixed interest periods for loans to households in Germany for house purchase

Real economic indicators

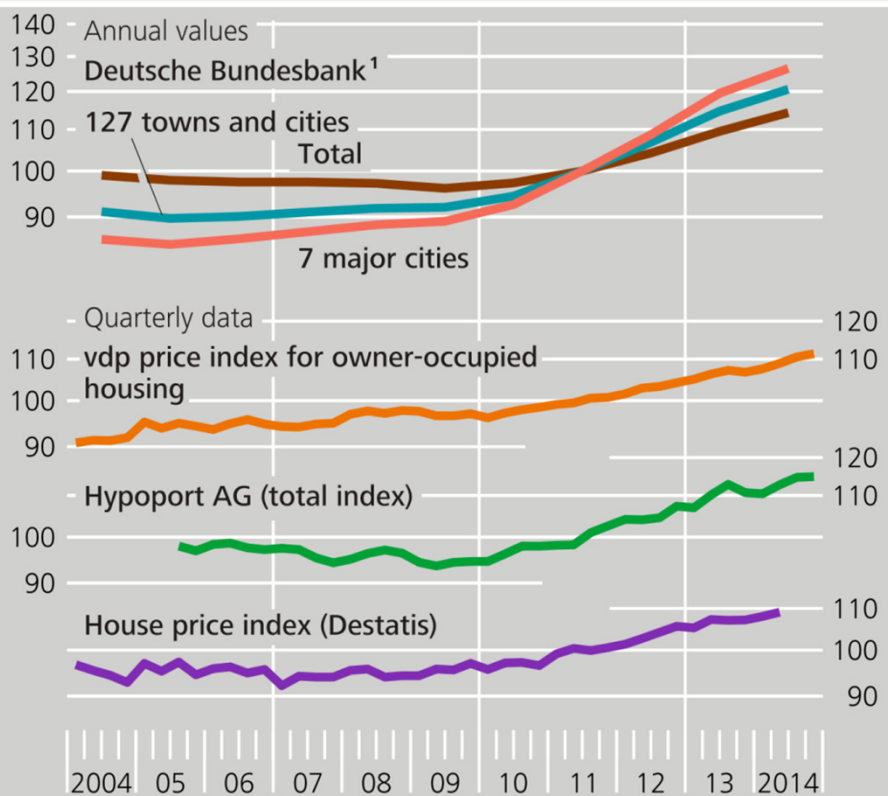
- Building permits and completed housing units in Germany
- Housing investment in Germany
- New orders for housing construction in the main construction sector
- Number of transactions for apartments in Germany

3. The Bundesbank's dashboard

Prices have been rising since 2010, albeit with no acceleration recently.

Selected house price indices for Germany

2010 = 100, log scale



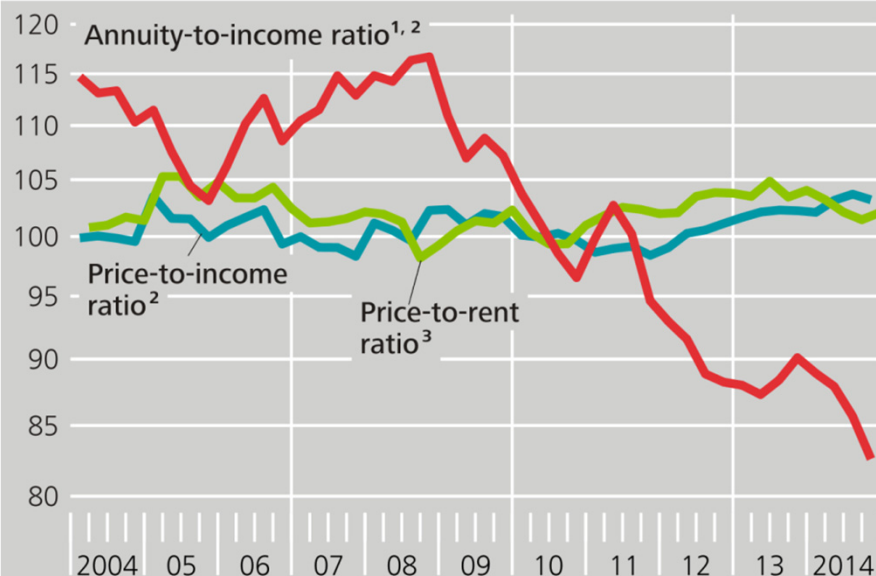
1 Transaction-weighted. Bundesbank calculations based on data provided by bulwiengesa AG.

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Standard indicators to evaluate residential property prices in Germany

2010 = 100, log scale



Source: Bundesbank calculations based on data provided by the Association of German Pfandbrief Banks (vdp). **1** Annuity of a mortgage loan with a fixed interest rate (between five and ten years) and a hypothetical term of 30 years in relation to household income. **2** Disposable income per household in Germany, nominal. An increase represents a rise in the purchase price in relation to disposable income. **3** Prices and rents of apartments.

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3. The Bundesbank's dashboard

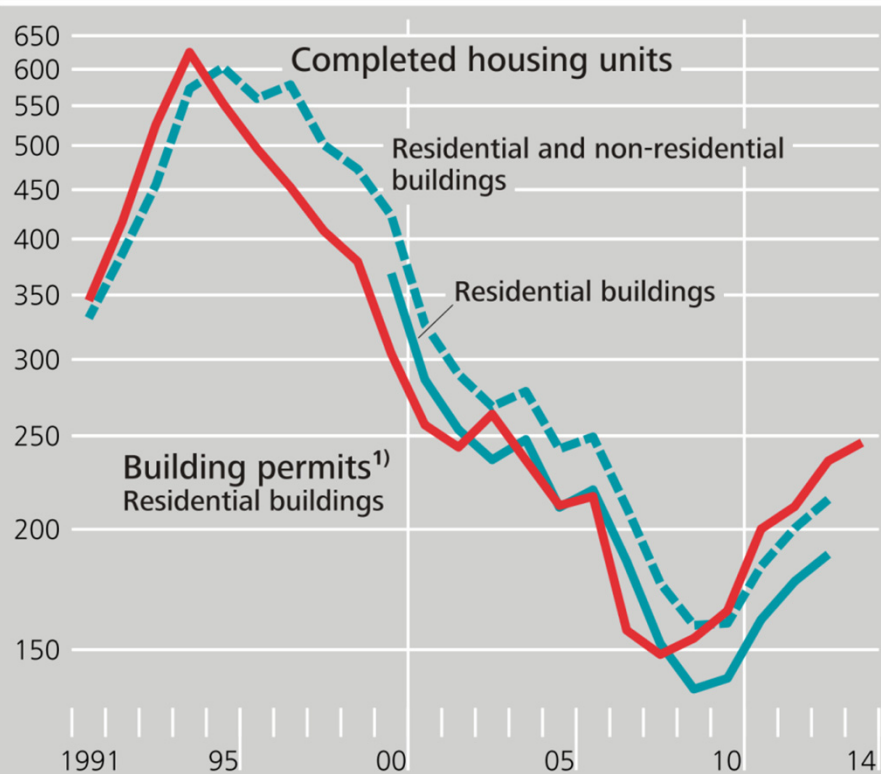
- The observed price movements do not, on their own, make it possible to derive any **potential overvaluation or undervaluation**. A **benchmark** would be required, but it **cannot be specified unambiguously** from a conceptual point of view, **nor can it be observed directly**.
- Price data going far back into the past contain **statistical breaks**. Averages of the standard indicators do not take account of **medium and long-term trends**.
- If prices as well as rents rise substantially, the **price-to-rent ratio** may remain **largely unchanged**. Conversely, the **price-to-income ratio** would **shoot upwards**.
- If the **interest rate conditions** for new mortgage loans are taken into account, a **substantial improvement of affordability** can be observed since the outbreak of the financial crisis.

3. The Bundesbank's dashboard

Price movements reflect the lagged expansion of the housing supply.

Building permits and completed housing units in Germany

Thousand, log scale



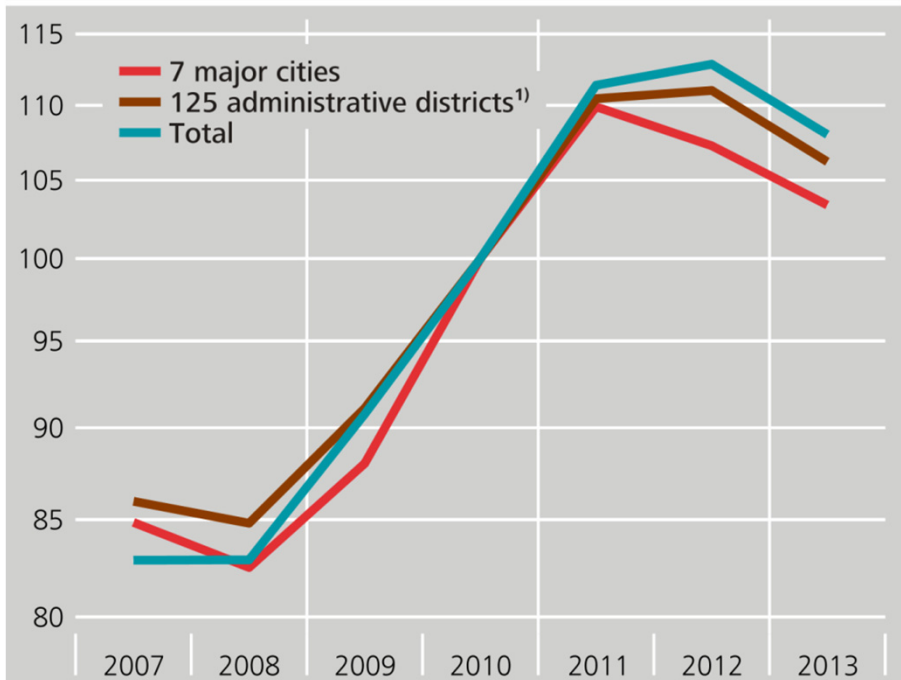
¹ Excluding building permits for construction on existing buildings.

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Number of transactions for apartments in Germany

2010 = 100, log scale



Source: Extrapolation provided by vdpResearch GmbH on the basis of data from surveyor committees. ¹ Regional coverage not entirely comparable with residential property prices for 125 towns and cities from bulwiengesa AG.

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3. The Bundesbank's dashboard

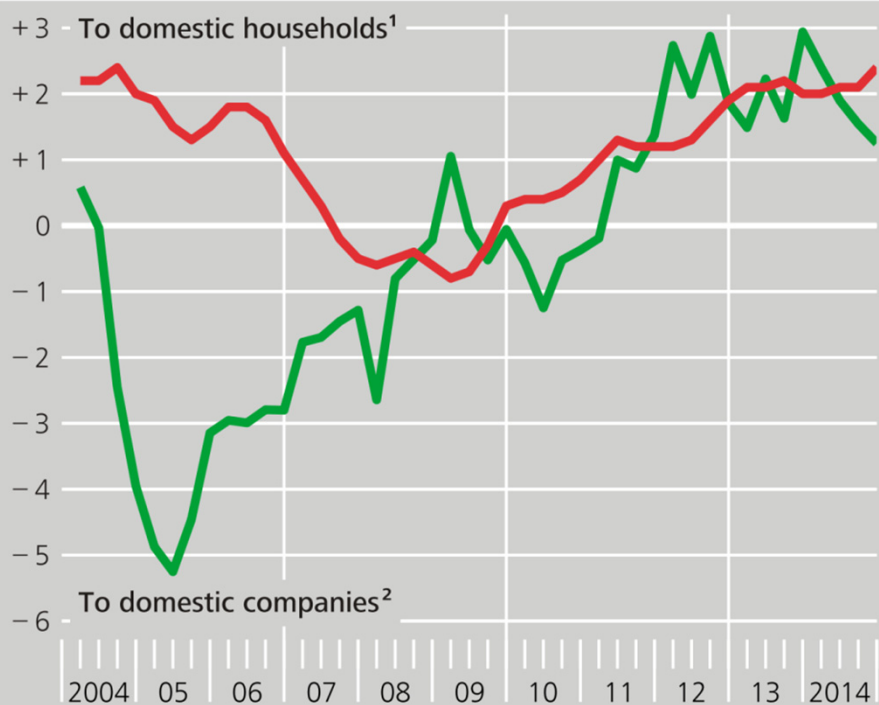
- Since 2010, **only the price indicators for Germany** demonstrated **strong upward movements**.
- The Bundesbank could **not**, on the basis of model-based analyses of the valuation situation in the housing market, detect **any notable deviations from fundamentally justified housing prices** throughout Germany.
- Hence, at present, **no substantial macroeconomic risks** are arising from the price structure on the housing market.
- In the **127 cities** studied, current estimates put **upward price deviations at between 10% and 20%**, measured in terms of the longer-term demographic and economic variables; with **freehold apartments in major cities** showing the **strongest overvaluations**.

3. The Bundesbank's dashboard

Despite the low interest rates, growth in mortgage loans is still sluggish.

Dynamics in domestic banks' loans for house purchase*

Year-on-year rate of change as a percentage, end-of-quarter data

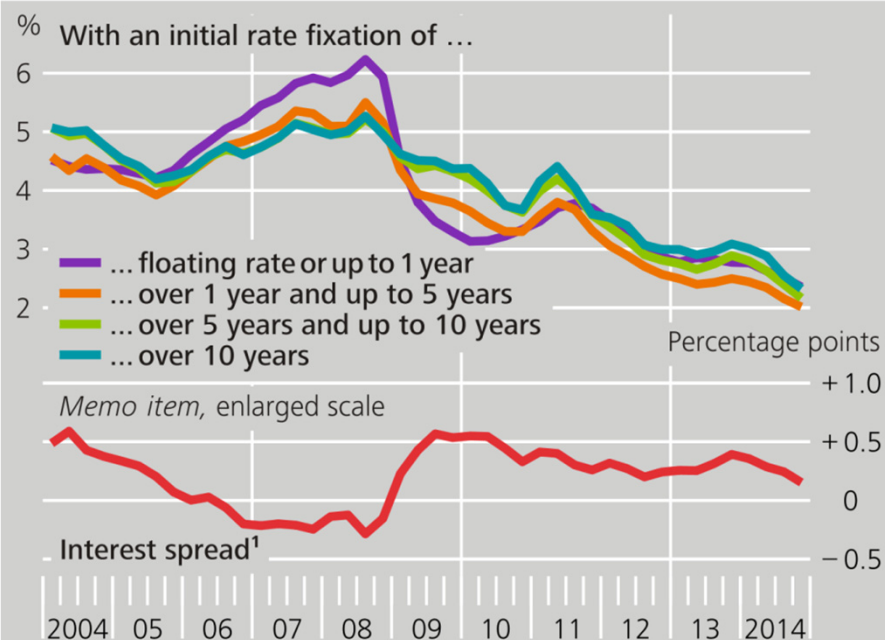


* Data for MFIs adjusted for statistical changes. **1** Seasonally adjusted. Including self-employed persons and sole traders. **2** Not seasonally adjusted. Excluding self-employed persons and sole traders.

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Interest rates on loans to households in Germany for house purchase*



* Data based on the monthly new business of the MFI interest rate statistics for secured and unsecured loans, excluding overdraft loans. **1** Calculated as the difference between the interest rate with an initial rate fixation of over 5 years and up to 10 years and the interest rate with an initial rate fixation of over 1 year and up to 5 years.

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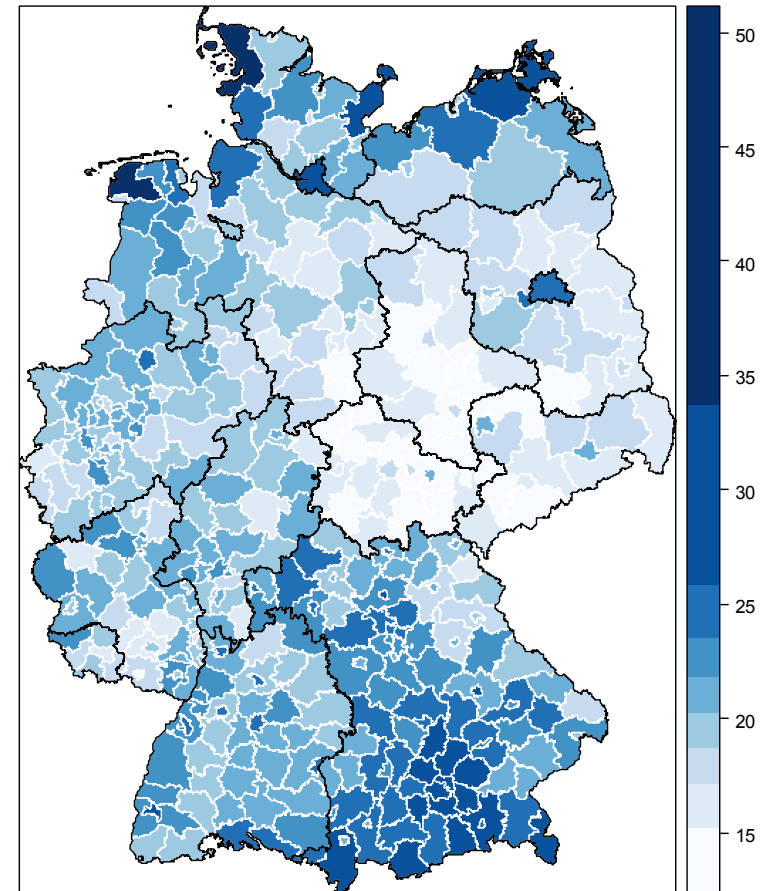
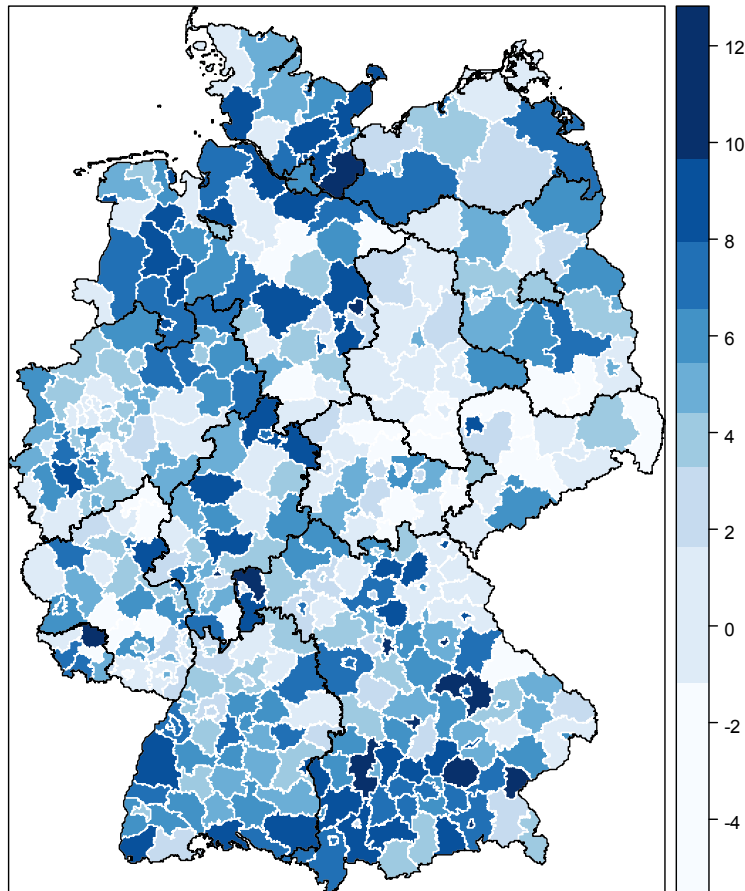
3. The Bundesbank's dashboard

- The **other indicators** mentioned above **did not reach critical levels**.
- However, **studies of averages throughout Germany** have **limited value**, as moderate rates of increase in housing loans for the whole of Germany could **obscure a heterogeneous regional distribution of lending growth**.
- The Bundesbank's analyses show **very few signs of procyclical behaviour** by banks **or of a destabilising nexus between mortgage lending and property prices**. However, it is striking that, in the **towns and cities under consideration with sharply rising housing prices**, a **large share of mortgages** have a German sustainable **loan-to-value ratio (*Beleihungsauslauf*) of over 100%**.
- This points to **structural vulnerabilities in the German banking system** to urban real estate market risks.

4. Spatial dependencies

Price changes from 2013 to 2014, in %

Price-to-rent ratio in 2014



4. Spatial dependencies

- Although the **differences in price rises** between the regions **diminished** again in 2014, **waning price dynamics** did not reduce **existing gaps** between Southern and Northern Germany as well as Western and Eastern Germany.
- **Special effects in prices** are **attributable to tourism**, particularly at the North Sea and Baltic coasts.
- The **steep rise in prices** has so far been **largely confined to regions with an urban character**.
- With regard to the future stability of the residential property market as a whole, it is therefore of **key importance to investigate the spatial transmission channels of price impulses in greater depth**.

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