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

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* This presentation represents the author’s personal opinions and does not necessarily reflect the views of the Deutsche Bundesbank or its staff.
Structure of the presentation

1. Motivation and introduction

2. The Bundesbank’s dashboard

3. Affordability indicators

“Residential and commercial property prices” (Recommendations 17 and 18 of the G20 Data Gaps Initiative II, DGI-2)
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 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.
## 2. The Bundesbank’s dashboard

### System of indicators for the German residential property market

#### 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
- Rents 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 in Germany
- Number of transactions for apartments in Germany
2. The Bundesbank’s dashboard
Continuing strong demand outweighed expansion of the housing stock.

- Last year saw a further sharp increase in residential property prices with housing price inflation being regionally more broadly based than in earlier years.

- 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.

- All things considered, the increase in the price of residential property during the reporting year is likely to be greater than is suggested by the dynamics of the demographic and economic fundamentals.
2. The Bundesbank’s dashboard
Housing is still being valued exceptionally highly in urban regions.

- 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.

- While the macroeconomic price-to-income ratio has shown a marked increase over the past three years, there is likely to have been a further improvement in the affordability of residential property owing to the low financing costs of acquiring it.

- According to the latest estimations, the relevant upward price deviations in towns and cities still amount to between 10% and 20%. In this context, freehold apartments in the major cities continue to show the steepest overvaluations.
2. The Bundesbank’s dashboard

Additional stimulus by the further improvement in financing conditions.

- According to vdp, **house prices have risen** since the beginning of 2010 to end-2015 by **21%**.
- **Nominal disposable income per household increased** in the same time period by **12%**.
- The **average rate for mortgage loans declined** during the past five years by more than 2 percentage points to **below 2%**.
- The **annuity burden has (ceteris paribus) decreased by 26%** in the period under consideration due to the low-interest-rate environment.
- Hence – albeit prices have risen – the **affordability of financing a house has increased by 20%** (although it decreased by 8% without the interest rate effect).
2. The Bundesbank’s dashboard
Averages do not take account of medium and long-term trends.

- Nominal retail prices of potatoes in U.S. cities have risen from 16¢ per 10lb. in 1890 by a factor of 4.6 to 89.7¢ in 1970.

- Average hourly earnings in manufacturing in the same time period increased more than 23-fold from 14.4¢ to 3.36$.

- Thus, the average manufacturing worker’s time required to buy one kilogram of potatoes decreased from 14.7 minutes to 3.5 minutes (−76%) – with the long-term average being 8.6 minutes.

- Rhetorical question: Are potatoes, therefore, 60% undervalued in 1970?
2. The Bundesbank’s dashboard
Continued low-interest-rate environment entails risks.

- If prices continue to rise, creditors could be tempted to expand lending excessively and loosen credit standards. This can result in systemic risks.
- Although new lending accelerated significantly during 2015, growth in mortgage lending to households can still be described as moderate in a longer-term comparison.
- Moreover, household debt levels in Germany continue to decline, at least in aggregate terms.
- What is more, the Eurosystem’s regular Bank Lending Survey shows that German banks have not loosened their lending standards for mortgage loans since 2014.
2. The Bundesbank’s dashboard

Price-to-rent ratio for apartments in 2015

- Studies of averages throughout Germany have limited value, as moderate rates of increase in house prices for the whole of Germany could obscure a heterogeneous regional distribution.

- Although the differences in price rises between the regions diminished again in 2015, waning price dynamics did not reduce existing gaps between Southern and Northern Germany as well as Western and Eastern Germany.

- 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.
2. The Bundesbank’s dashboard
3. Affordability indicators

– The **annuity-to-income ratio** extends the price-to-income ratio in the sense that it takes into account the **interest rate conditions**.

– The question, however, remains **what drives the ratio** – is it the numerator (e.g. price) or the denominator (e.g. income)?

– Over and above, **what price should be used**? Certainly, it should be **quality adjusted**. But should it relate to **apartments in urban markets** only, say?

– The same line of reasoning applies to **income**. A **per household** approach appears to be reasonable. But how **narrow or wide** should it be defined?

– Last but not least, **lending standards differ considerably across countries** in terms of loan-to-value ratio, initial rate fixation, life of the loan and so forth.
### 3. Affordability indicators
Institutional characteristics of mortgage loans (SVR 2013/14)

<table>
<thead>
<tr>
<th>Country</th>
<th>Housing loans to GDP (%)</th>
<th>Average loan to value (%)</th>
<th>Share of floating rates (%)</th>
<th>Average life of the loan (years)</th>
<th>Possibility to withdraw equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>47</td>
<td>83</td>
<td>10</td>
<td>20</td>
<td>No</td>
</tr>
<tr>
<td>Germany</td>
<td>45</td>
<td>70</td>
<td>15</td>
<td>25</td>
<td>No</td>
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<tr>
<td>France</td>
<td>42</td>
<td>75</td>
<td>15</td>
<td>15</td>
<td>No</td>
</tr>
<tr>
<td>Ireland</td>
<td>84</td>
<td>70</td>
<td>67</td>
<td>20</td>
<td>Limited</td>
</tr>
<tr>
<td>Italy</td>
<td>23</td>
<td>50</td>
<td>47</td>
<td>15</td>
<td>No</td>
</tr>
<tr>
<td>Netherlands</td>
<td>106</td>
<td>90</td>
<td>18</td>
<td>30</td>
<td>Yes</td>
</tr>
<tr>
<td>Austria</td>
<td>28</td>
<td>60</td>
<td>61</td>
<td>25</td>
<td>No</td>
</tr>
<tr>
<td>Sweden</td>
<td>78</td>
<td>80</td>
<td>52</td>
<td>25</td>
<td>Yes</td>
</tr>
<tr>
<td>Spain</td>
<td>62</td>
<td>70</td>
<td>91</td>
<td>20</td>
<td>Limited</td>
</tr>
<tr>
<td>U. K.</td>
<td>84</td>
<td>85</td>
<td>.</td>
<td>25</td>
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<td>30</td>
<td>Yes</td>
</tr>
</tbody>
</table>
3. Affordability indicators
The case of Germany

Debt of households in Germany*
Annual averages¹

- As a percentage of GDP
  - Total debt²
    - Quarterly data
    - Loans for house purchase
- As a percentage of disposable income
  - Total debt²
  - of which Loans for house purchase

Source: Deutsche Bundesbank's financial accounts. * Unconsolidated. ¹ Until 1998 according to ESA 1995; from 1999 according to ESA 2010. ² Excluding other liabilities.

Fixed interest periods for loans to households in Germany for house purchase*
As a percentage

- With an initial fixed interest rate ... 
  - ... of over 10 years
  - ... over 5 years and up to 10 years
  - ... over 1 year and up to 5 years
  - ... floating rate or up to 1 year

* Calculated as a share of domestic banks’ credit volume with a respective fixed interest rate of the total volume.

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3. Affordability indicators
Price-to-income ratio in the euro area

### Percentage change from 2010 to 2015

<table>
<thead>
<tr>
<th>Country</th>
<th>Prices</th>
<th>Income</th>
<th>P-to-I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>+18</td>
<td>+11</td>
<td>+6</td>
</tr>
<tr>
<td>Euro area</td>
<td>−1</td>
<td>+5</td>
<td>−5</td>
</tr>
<tr>
<td>Periphery*</td>
<td>−18</td>
<td>−2</td>
<td>−17</td>
</tr>
</tbody>
</table>

An increase represents a rise in the purchase price in relation to disposable income.

### Share of disposable income (gross)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of euro area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>28</td>
</tr>
<tr>
<td>Periphery*</td>
<td>35</td>
</tr>
</tbody>
</table>

* Greece, Ireland, Italy, Portugal and Spain.
### 3. Affordability indicators

Annuity-to-income ratio in the euro area

<table>
<thead>
<tr>
<th>Country</th>
<th>P-to-I</th>
<th>Interest</th>
<th>A-to-I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>+ 6</td>
<td>−23</td>
<td>−19</td>
</tr>
<tr>
<td>Euro area</td>
<td>− 5</td>
<td>−20</td>
<td>−24</td>
</tr>
<tr>
<td>Periphery*</td>
<td>−17</td>
<td>−19</td>
<td>−33</td>
</tr>
</tbody>
</table>

An increase represents a rise in the purchase price in relation to disposable income.

#### Share of credit volume (5 to 10 years)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of euro area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Periphery*</td>
<td>1</td>
</tr>
</tbody>
</table>

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1 Greece, Ireland, Italy, Portugal and Spain.

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