The Real Estate Valuation Puzzle:
What drives local house prices?

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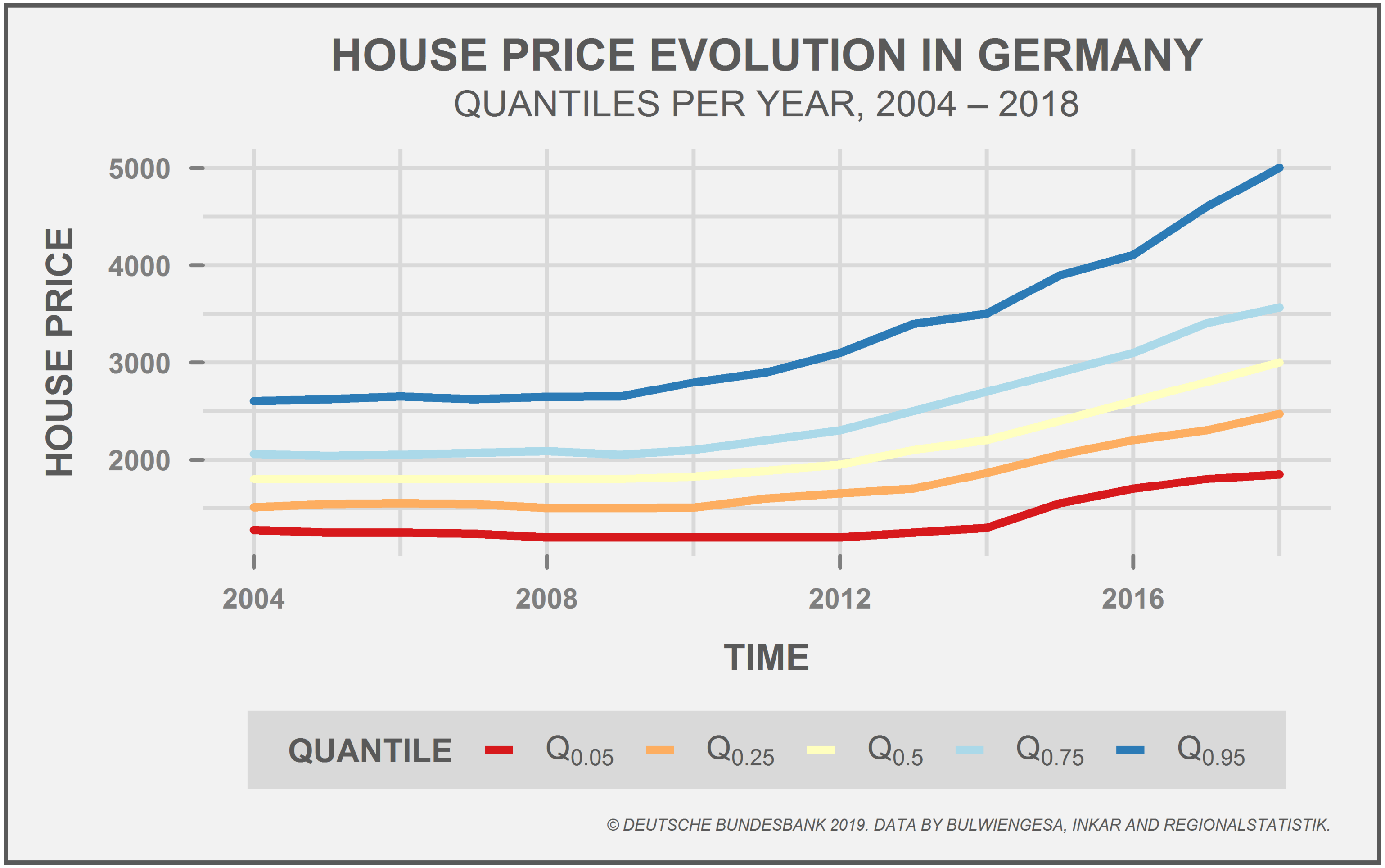
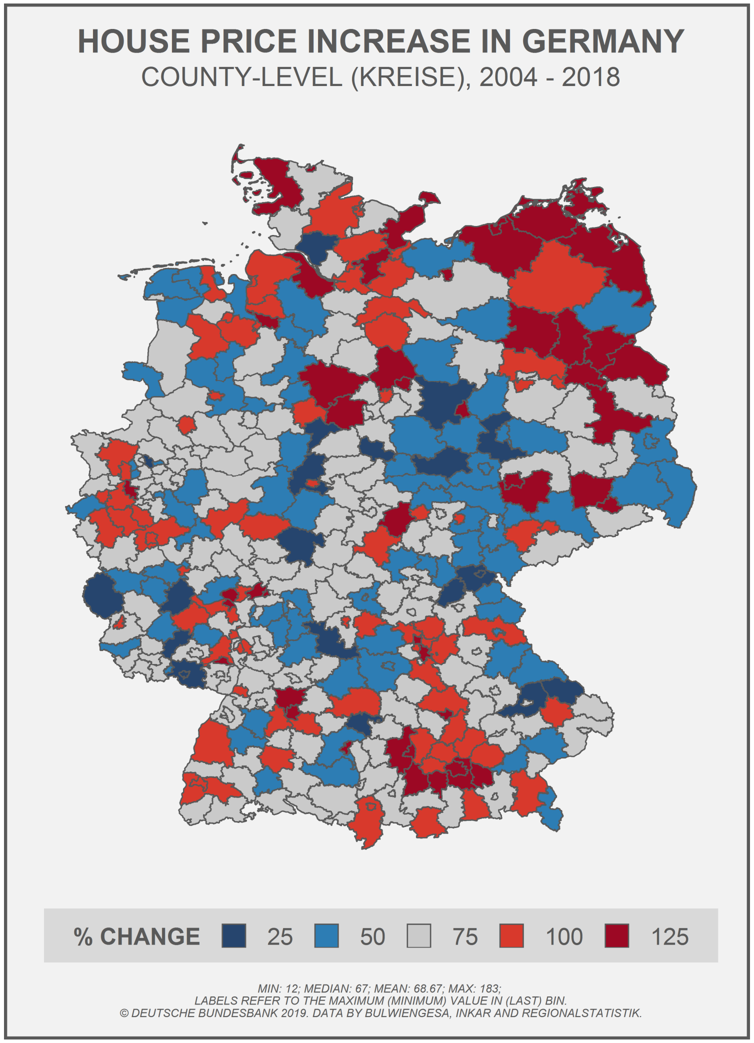
Disclaimer: The views expressed in this paper are those of the author(s) and do not necessarily coincide with the views of the Deutsche Bundesbank or the Eurosystem

Motivation
Real Estate Price Boom in Germany



Motivation (cont‘d)
Real Estate Price Appreciation Germany: Geographic Distribution



- Real estate boom in Germany (median increase of around 60%)
- Real estate boom was **not homogenous**
  - Large cross-sectional dispersion at all points in time and widening
- Understanding the variation in real estate prices is of utmost **importance for financial stability**

Related Literature
Taking Stock of Current Thinking

– Several drivers suggested to explain variation in real estate prices:

- *monetary policy* (Jorda, Schularick, and Taylor 2015),
- *credit* (Mian and Sufi 2011),
- *very long-term discount rates* (Giglio, Maggiori, and Stroebel 2014),
- *foreign capital* (Badarinza and Ramadorai 2018),
- *financial innovation* (Geanakoplos 2010)

– **Evidence is mixed**

– **But:** puzzling facts are often attributed to **expectations** (Glaeser and Nathanson 2017, Burnside, Eichenbaum, and Rebelo 2016)

- **Empirical evidence on the role of expectations is scarce**
  (due to the scarcity of micro-level data on household expectations)

Overarching Question
Our Contribution

Research question:

What is the role of expectations for real estate prices?

Data/Approach:

- Regionally disaggregated data on **expectations from Germany** and **United States** (county level)
- High-quality survey data from **BBk SCE (Pilot) Survey** and **FRBNY SCE survey**
  - *Expectations about prices and rents*
  - *1-year and 5-year horizon*
  - *Density questions*
  - *Designed in levels (instead of growth rates)*

Our contribution:

- **Quantify** empirically to what extent expectations versus other potential drivers are able to explain real estate prices

Theoretical Framework Guiding our Analysis

I. **Rents** can be explained by fundamentals.
   - All (fundamental) factors affecting supply and demand for housing in a given location should capitalize into rents

II. **House prices** affected by rents, but large unexplained component remains.
   - Variation in price-rent ratios (valuations)

III. **Price-rent ratios** can be explained by expected returns.
   - Asset pricing: Cross-section and time series variation in expected returns drives variation in valuations
     - RE: negative relationship,
     - Learning: positive relationship
   - Adam, Marcet, and Beutel (2017): Learning about capital gains jointly explains expectations and asset valuations (price-dividend or price-rent ratio)

Results: Quick Drive-Thru‘

- **Starting point:**
  - Cross-sectional variation outweights time-series variation (up to 4 times more)
    - **Focus on cross-sectional variation**
  - (Surprisingly) similar results for United States and Germany

- **First Insights from Empirical Analyses:**

I. „**Rents** can be explained by fundamentals.“
  - Five variables explain 32 % (U.S.) or 46 % (DE) of rent variation

II. „**House prices** affected by rents, but large unexplained component remains.“
  - Rents explain 61 % or 68 % of price variation

Results: Quick Drive-Thru‘

III. „Price-rent ratios can be explained by expected returns.“

(!) Positive correlation of expected returns and price-rent ratio

(!) Expectations explain 14% or 6 % of price-rent ratio variation

(!) Additional variables raise explained variation to 53 % or 44 %

- Wealth Control
- Income Control

Proxies for financing constraints

- Outlook Control
- Building Projections Control

Proxies for very long-term expectations

– <u>**Our take-away so far:**</u>

- **(medium-term) expectations** explain only part of the variation
- **Financing constraints** and **very long-term expectations** appear to be (even more) important

Roadmap

Different paths to take from here:

- Extend coverage of expectations and wealth (using Bundesbank‘s PHF data)

- Zoom-in and examine…:
  - … the link between **housing and financing** (exploiting micro-data on financing constraints and wealth)
  - … the link between **loan rates and LTV ratios** in bank (real estate) credit portfolios (using Bundesbank‘s „Sonderumfrage“)

- Investigate role of **„very long-term“ expectations …**
  - … in future surveys (up to 30 year horizon, measurement non-trivial)
  - … novel aspect

- Build **models** matching these facts (e.g. combining learning and financing constraints)

Conclusion

- Quantification of different drivers affecting (local) house prices

- As conjectured:
  - Fundamentals affect **rents**
  - Rents affect **prices**
  - Expectations affect **price-rent ratios**

- However:
  - **Quantitative** explanatory power of (medium-term) expectations limited
  - Proxies for **financing constraints** quantitatively important (wealth and income distribution)
  - **Very-long term expectations** appear important