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11–15 SEPTEMBER 2022
Warsaw, Poland

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High Quality Long-Run Real Estate Price Indices for Germany

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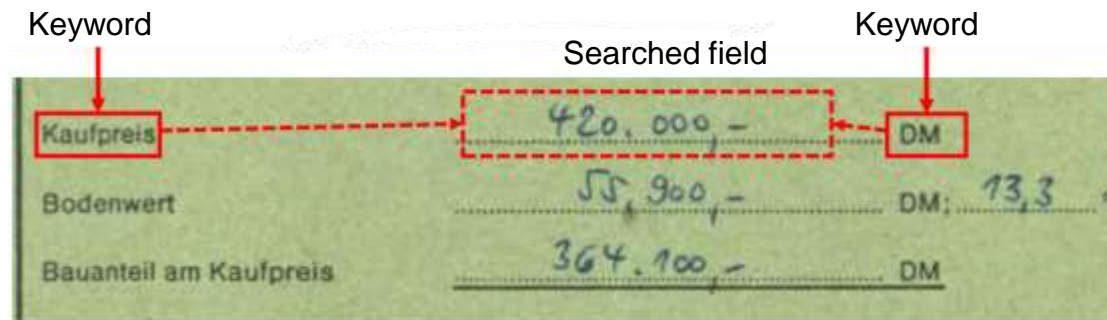Trimble.

How the project started:

- Started in 2020 as cooperation between the **University of Bonn**, the research institute **ECONtribute** and the *Gutachterausschüsse*
- Goal was to build high quality **long-run regional** housing price indices for Germany
- Small pilot project in Frankfurt with the partial **digitization** of the old **historic archives**

How it is going:

- Cooperating with **13** large German cities, **9** of which we have fully digitised the historic archives
- Merged the transaction-level data from the **archives** with **current data**
- Built several indices at the **city** and **neighborhood** levels for different residential **property types**

Archives Digitisation - Procedure

1. Archives are **scanned** by professional company (in some cases > 100k documents)
2. Scans are **digitised** using professional **OCR** software

3. A team of research assistants controls the output of the software
4. The data is formatted into a large data set

Overview

City	Period	Type	Status
Frankfurt	1960 - 2021	analogue & digital	finished
Hamburg	1950 - 2021	analogue & digital	finished
Berlin	1965 - 2018	digital	finished
Dortmund	1963 - 2021	analogue & digital	finished
Munich	1961 - 2021	analogue & digital	ongoing
Stuttgart	1963 - 2021	analogue & digital	ongoing
Cologne	1975 - 2019	analogue & digital	finished
Dusseldorf	1960 - 2021	analogue & digital	ongoing
Wiesbaden	1960 - 2019	digital	finished
Duisburg	1970 - 2021	analogue & digital	ongoing
Lubeck	1963 - 2021	analogue & digital	ongoing
Munster	1985 - 2020	digital	finished
Dresden	1991 - 2016	digital	finished

Index Construction – Time Dummy Hedonic Model

- Using **transaction-level data** we run hedonic regressions controlling for property characteristics (k) for property (i):

$$ln(P_t^i) = \beta^0 + \sum_{\tau=0}^{T} \gamma_\tau D_\tau^i + \sum_{k=1}^{K} (\beta^k * z^{k,i}) + \epsilon_t$$
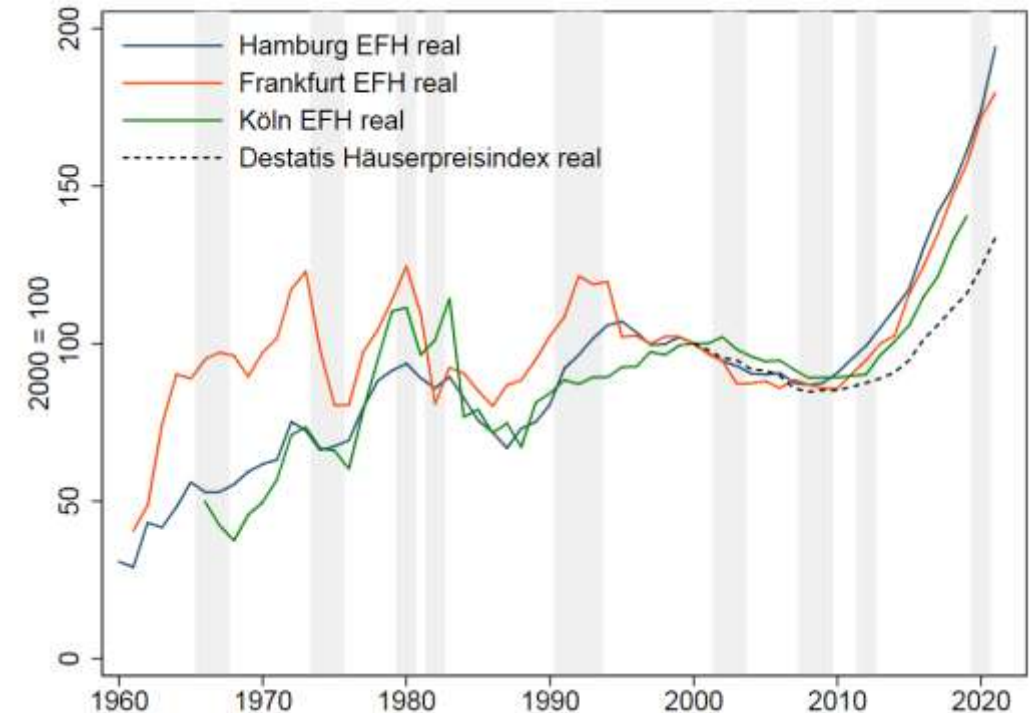
- Controls for sample changes over time

- Use a 5-year „rolling-window" procedure to account for changing coefficients

- Control variables are:
    - Floor area, living area, location within the city (e.g. neighborhood), type of building, quality of location (Brw), garage, etc...

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Index Catalogue:

- For 3 different residential market segments: **single-family housing**, **multi-family housing** and **apartments**
- **Yearly** and **quarterly** indices
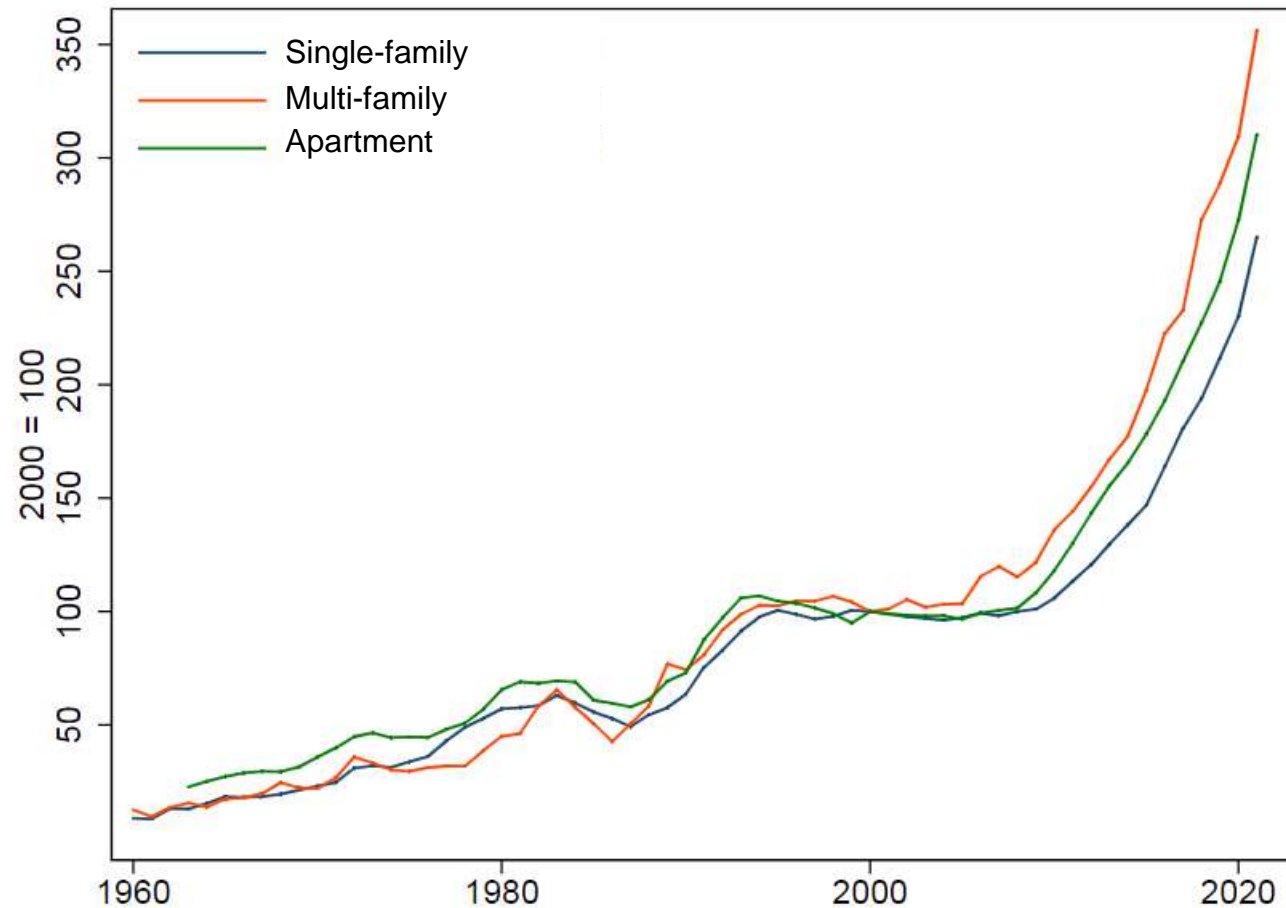- At the **city-level** and **neighborhood-level**

First Results:

- Price growth in the last 10 years in the large cities is underestimated by national index

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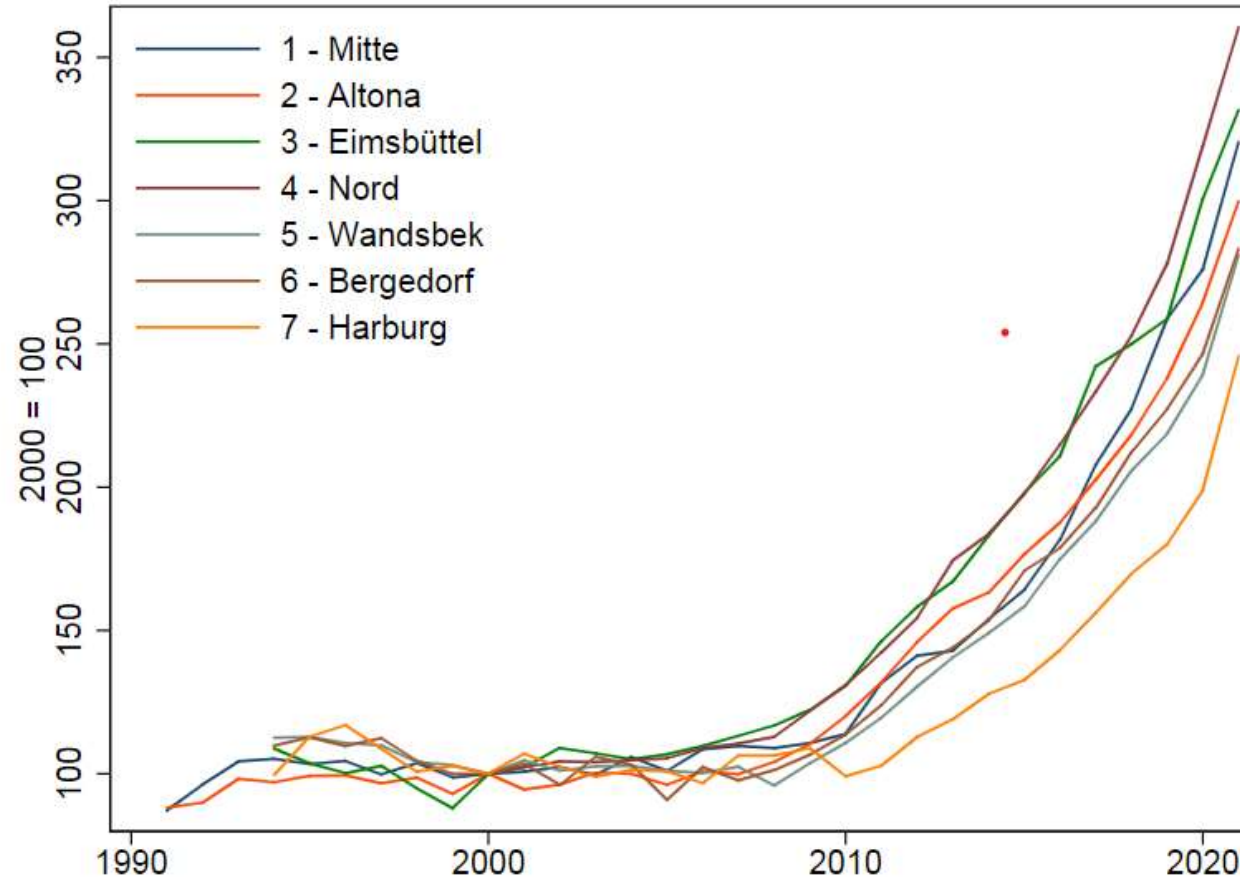Geospatial excellence
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Housing price series for different market segments in Hamburg (1960-2021)

- **Multi-family** housing with stronger price growth than other segments

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Apartment price series for different neighborhoods in Hamburg (1990-2021)

- Growing **dispersion** between neighorhoods with **central areas** becoming even more expensive

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Apartment price series for different neighborhoods in Cologne (1990-2021)

- Growing **dispersion** between neighorhoods with **central areas** becoming even more expensive

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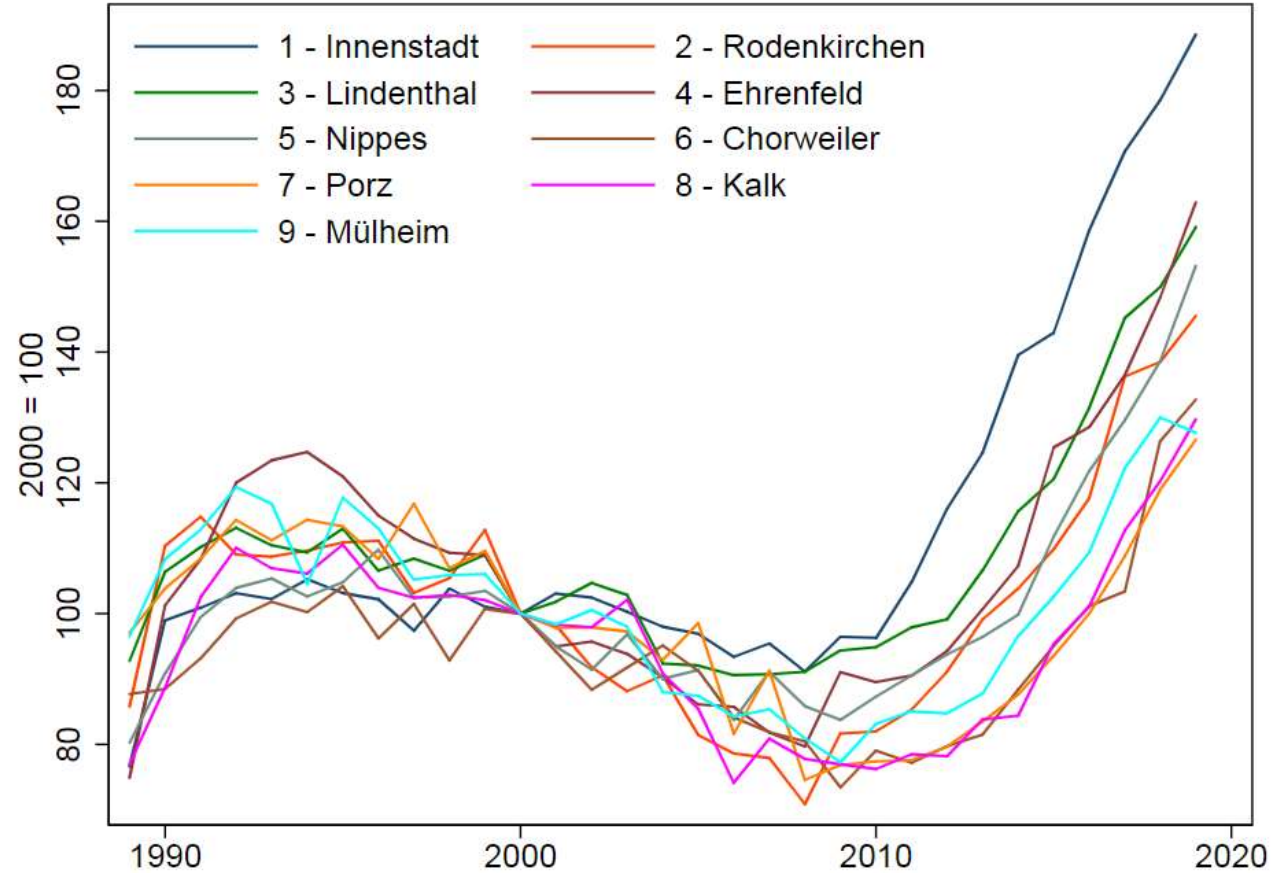
Conclusion

- Ongoing project to construct a **comprehensive** transaction-level **data set** for large **German cities**

- **OCR** software allowed us to digitise **thousands** of documents

- New high quality **hedonic** indices allow us to compare different **cities**, **market segments** and **neighborhoods**

- First results point to **increasing dispersion** across market segments and neighborhoods

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Thank you!

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