And in the long run all discrimination is gone? The impact of competition and vacancy times on discrimination in rental housing markets
Motivation: Large Variation in Housing Markets

Relation Angebot-Nachfrage: Wohnungen je 1.000 Haushalte* 2013

- Adequate markets: vacancy rates of ~ 3%
- Tight markets with demand surplus
- Relaxed markets with supply surplus

Tested in former e-mail correspondence tests

Source: prognos 2016, based on Statistisches Bundesamt 2015
Motivation & Research Questions

- Dozens of field experiments document, but do not explain discrimination in housing markets (Bertrand/Duflo 2016)
- Nearly all experiments focused on specific sites: (Few) cities with very tight housing markets
- Knowledge on the effects of market conditions is scarce
- Little is known on the external validity (Shadish et al. 2002)

RQs:

- Does the level of discrimination vary w/ market conditions?
  - Relation of supply & demand
  - Kind of supplier (private or corporate)
- Are field experiments w/ typical sampling strategies wrong on the level (or nature of) discrimination?
Mechanisms: Three Natures of Discrimination

1. Tasted-based discrimination (Becker 1971): Avoidance of contact with minorities even if this lowers economic profits

2. Economic Discrimination to increase profits
   - Statistical discrimination (Arrow 1971; Phelps 1972): Ethnicity serves as a proxy for e.g. ability to pay rents
   - Monopolistic/price discrimination: Actors, especially companies, try to get higher rents out of existing discrimination in the marketplace

3. Implicit Discrimination (e.g. Bertrand et al. 2005): Unintentional discrimination outside of actor's awareness
   - Probably impacts economic behaviour in case of subtle, complex & ambiguous tasks (e.g. when using quick heuristics; Bertrand/Mullainathan 2004)
Effects of Market Conditions

- Less discrimination in less housing markets w/ over-supply?
  - Over-supply intensifies competition for (suitable) renters
  - Costs of discrimination may be higher in case of over-supply

- Or similar levels of discrimination in all markets?
  - Actors might act unintentional
  - (Search) costs might be too low anyway to hamper discrimination

Under-Supply

Discrimination

Over-Supply
Effects of Different Suppliers

• Corporate agencies discriminate less?
  – Distastes utilize less (less contact with renters)
  – They are less affected by rental debts
  – They are more likely monitored and sanctioned for discrimination

• The larger the agency, the less discrimination?
  – Larger agencies have more market power to discriminate on tastes
  – But larger agencies probably also…
    - … grew only large because of less taste-based discrimination
    - … use more standardized procedures
    - … have better possibilities to tailor minorities to owners w/o tastes

Small (private) supplier

Large (prof.) supplier

Discrimination
Effects of Typical Sampling Strategies

- Under-Supply
  - Discrimination
  - Small (private) supplier
- Over-Supply
  - Discrimination
  - Large (prof.) supplier
Design of Our Field Experiment

• Random sample of 5,000 rental apartments (2-4 rooms) advertised on a common online platform
  – Sampling of 500 advertisements per day
  – Sampling w/o replacement: each supplier is tested only once
  – Two 5-day sampling periods in May and December 2015

• Within-design: each supplier gets one inquiry by a Turkish (T) and one inquiry by a German (G) applicant
  – Time difference of about 1 hour, rotating order (G / T first)
  – Additionally variation of several applicant characteristics to test for the „nature“ of discrimination

• Experiments all over Germany

• Today only results on West-Germany (N = 3,406)
Dear Ms./Mr.,

I am highly interested in the advertised apartment. My name is Cem Güleryüz and I am permanently employed as an electrician. I am looking for an apartment for me and my family. I would be very grateful if you could offer me a showing and information on similar offers in the neighborhood.

Kind regards,

Cem Güleryüz

(Translated version; the variable dimensions are in green & italics)
Surplus of Our Data

- Combination w/ market data (spell data)
  - Information on *all* advertisements (~1 Mio) on daily basis for nearly one year (March 2015 – Febr. 2016)
  - Information on size of supplier (number of advertisements online)
  - Further information: e.g. time interval advertisement is online

<table>
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</table>

- Context information on different regional levels (“Landkreise” and RORs)
  - Geocoding of addresses via Google Maps API
  - Indicators for market situation (e.g. vacancy rates)
  - Controls: % foreigners, % unemployed, population density, migration balance, GNP, (vacancy rate), (supplier)
Results: Discrimination Rates

- Observed response patterns ($N = 3,406$ apartments)

<table>
<thead>
<tr>
<th></th>
<th>German Applicant (G)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>No response</td>
</tr>
<tr>
<td><strong>Turkish Applicant (T)</strong></td>
<td>No response</td>
</tr>
<tr>
<td></td>
<td>Response</td>
</tr>
</tbody>
</table>

**Discrimination against T**

**Discrimination against G**

- Net discrimination rate: $(472-142)/all cases = 9.7$
- Without considering cases w/ both no response: 14.6%
Huge Variation Across Regional Units (RORs)

Discr of G       Discr of T

flats per ROR

net discrimination rate (in %)

Düsseldorf
Duisburg / Essen
Rhein-Main

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More Supply → Less Discrimination?

![Graph showing the relationship between vacancy rate and net discrimination rate. The graph indicates a negative correlation, with a significance level of p = 0.009 **.](image-url)

Nov 22th 2017

Fabian Thiel, Katrin Auspurg & Andreas Schneck
Larger & Corporate Agencies $\rightarrow$ Less Discrimination?

Net discrimination rate (in %)

- Private
- Small agency (<7 offers)
- Medium-sized agency (7-22 offers)
- Large agency (>23 offers)

$p < 0.01^{**}$

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Add-On:
And in the long run all discrimination is gone?

Do Results Suffer from a “Length-Bias”? 
Possible Length Bias

- We use a typical „point sampling“: the sampling frame consist of all apartments advertised during a short time interval
  - Over-representing apartments w/ long search intervals

- Direction of bias:
  - Overestimation of discrim.? (More discrimination → longer search)
  - Underestimation of discrim.? (Longer search → less discrimination)
Length-Bias: First Results

![Graph showing the net discrimination rate over time online (log.)]

- $p = 0.12$

Net discrimination rate vs. time online (log.)
Summary

• Market conditions show small, but substantial effects

Under-Supply

Discrimination

Small (private) supplier

Large (prof.) supplier

Over-Supply

• There is hardly any evidence for a length-bias
  – Adds advertised for a longer time show similar discrimination rates than offers that just appeared on the market
Discussion & Outlook

• Market conditions might be confounded w/ tastes?
  – Stronger attitudes against foreigners in regions w/ over-supply
  – Effects of market conditions might therefore be biased

• Nonetheless, one has to expect a (slight) increase of discrimination in German housing markets
  – There are more and more tight markets
  – Law reform (“Bestellerprinzip”) leads to more private suppliers

• We work on additional analyses on the nature of discrimination: Does in particular taste-based discrimination decline in markets w/ too much supply?
  – First results suggest little impact of market conditions
References

State of Research

• Only very few experiments on housing markets studied several sites and find inconclusive research
  – Europe: Jann/Seiler (2013)
  – US: Hanson/Hawley (2014)

• There is only few research on external validity of field exp.
  – E.g., research on length bias is completely missing

• We add to this research by
  – Running experiments all over Germany at different time points
  – Combining the experiments w/ „big data“ on the market
Appendix: More Supply, Less Statistical Discrimination?

- Effects of applicants’ characteristics on net discr. (AMEs)
Agencies → Less Statistical Discr.? 

• Effects of applicants’ characteristics on net discr. (AMEs), private landlords and agencies

• Also no sign. differences by size of agency (only small tendency: larger agencies in general less picky)
Length-Bias: First Results

The graph shows the net discrimination rate (in %) against time online (quintiles). The x-axis represents the quintiles of time online, ranging from 1 to 5. The y-axis represents the net discrimination rate, ranging from 0 to 25%. The data points are connected by a line with error bars indicating variability. The p-value is stated as p = 0.16.
### Length Bias: Descriptive Statistics

<table>
<thead>
<tr>
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<th>Market (all time)</th>
<th>Market (exp time)</th>
<th>Experiment</th>
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<td><strong>Duration</strong></td>
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<tr>
<td>Mean</td>
<td>23.89</td>
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<tr>
<td>SD</td>
<td>31.53</td>
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<td>53.00</td>
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<td><strong>Sqm</strong></td>
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<tr>
<td>Mean</td>
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<td>SD</td>
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<td>Median</td>
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<td><strong>Price per sqm</strong></td>
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<tr>
<td>Mean</td>
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<td>Mean</td>
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<td><strong>Observations</strong></td>
<td>668,483</td>
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<td>4,106</td>
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</tbody>
</table>
More Supply → Less Discrimination?

context characteristics

vacancy rate [10 ppts.]
net population balance [per 100 inh.]
population density [1000 per skm]

type of landlord (ref.: agency)
private landlord

AMEs on discr.