ARCHITEKTURÖKONOMIE

UNIVERSITÄT ZÜRICH, CUREM*horizonte*, 09/05/2012

GABRIEL M AHLFELDT, LSE / URBANCONTEXT

LSE

URBANCONTEXT

Coordination Problems

Welfare Economics

- **Welfare Economics 101**

- Market allocates scarce ressources efficiently – in principle!
  - High (decentralized) information processing capacity
  - Incentives to adjust behaviour

No market failure	Market failure
Leave allocation to the **market**	**Regulation** improves welfare

Architecture

External effect on others

Public good (non-excludable/non-rival)

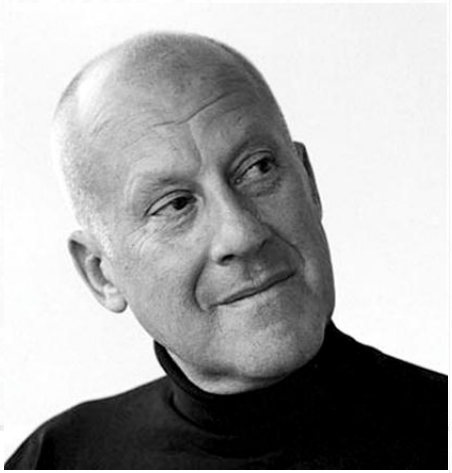
Free-riding

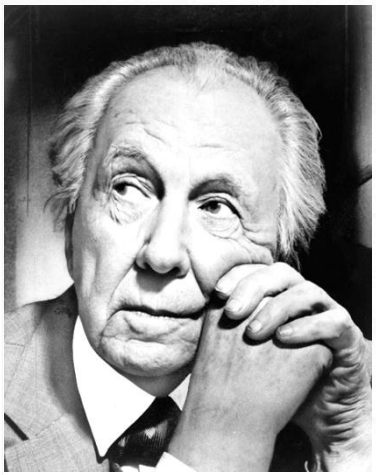
External WTP effect indicative of market failure / coordination problem

Empirics

Evidence

- **Q: How to measure architectural value?**
  - Which method can be used to measure the effect?
  - How can “good” architecture be identified?
    - Certificate
    - Architect
    - Stated and revealed preference indicators

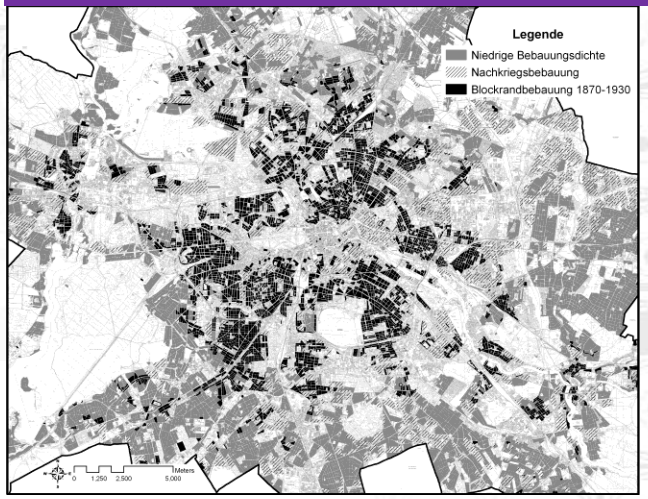





Land Values and Built Environment

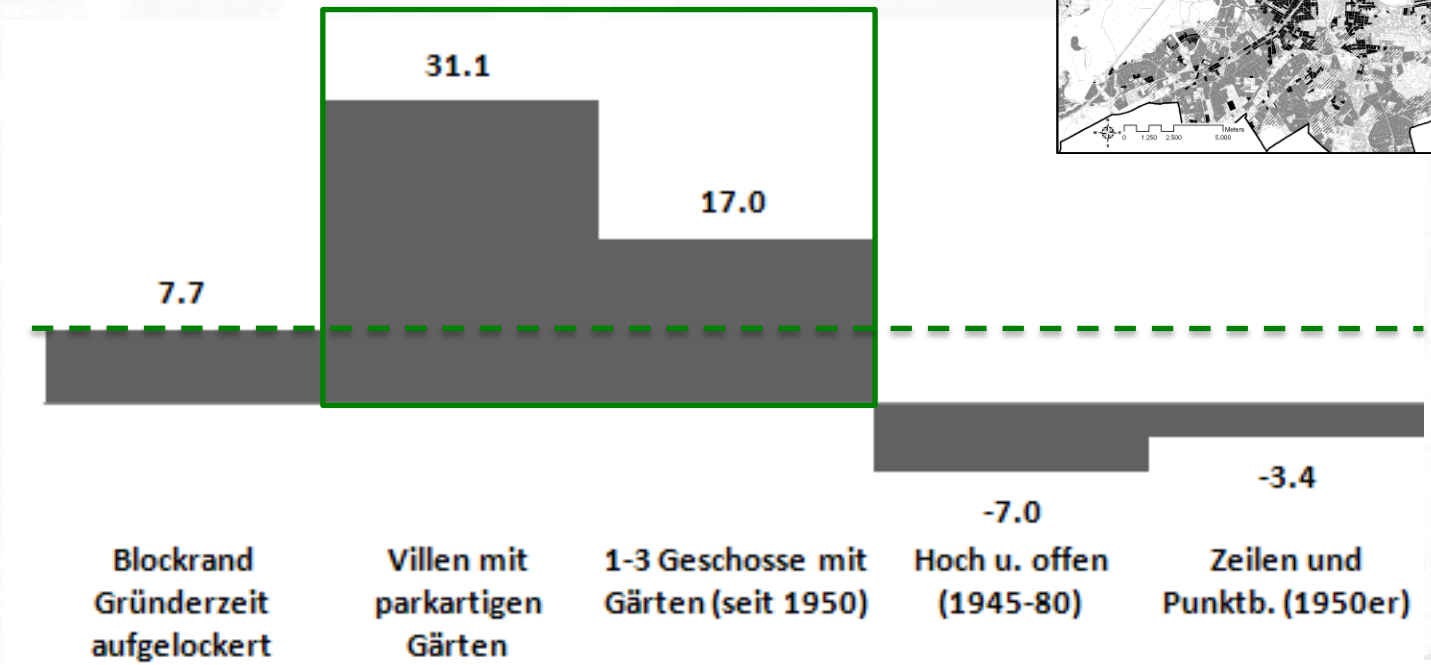
Evidence from Berlin, Ahlfeldt 209,disP

About 160000 statistical blocks



Land value premium controlled for structure and location

Significant premiums in low-density and historic high density areas

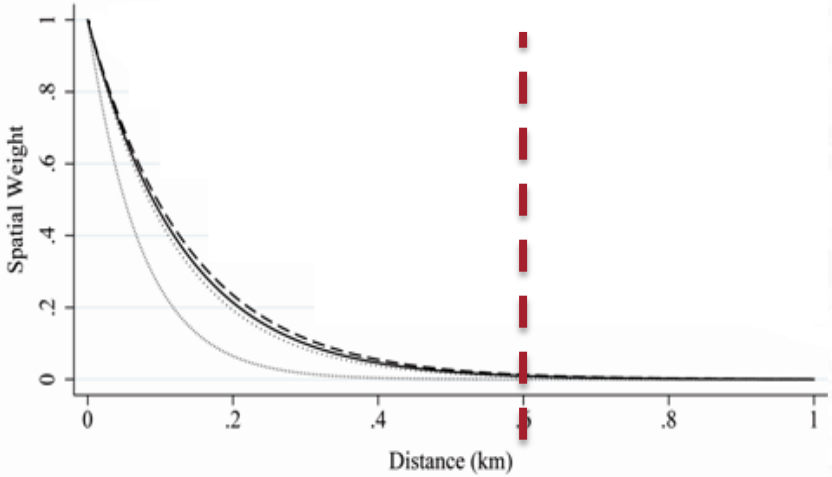


Certificate I

Historic landmarks in Berlin

About 8000 transactions

About 16000 landmarks



Positive external price effects (WTP)

Up to 600m

	Berlin
Average land value	358 €/m²
Aggregated land value	116.000 Mio €
Absolute contribution	1.370 Mio €
Relative contribution	1.18% %

Localized external effect

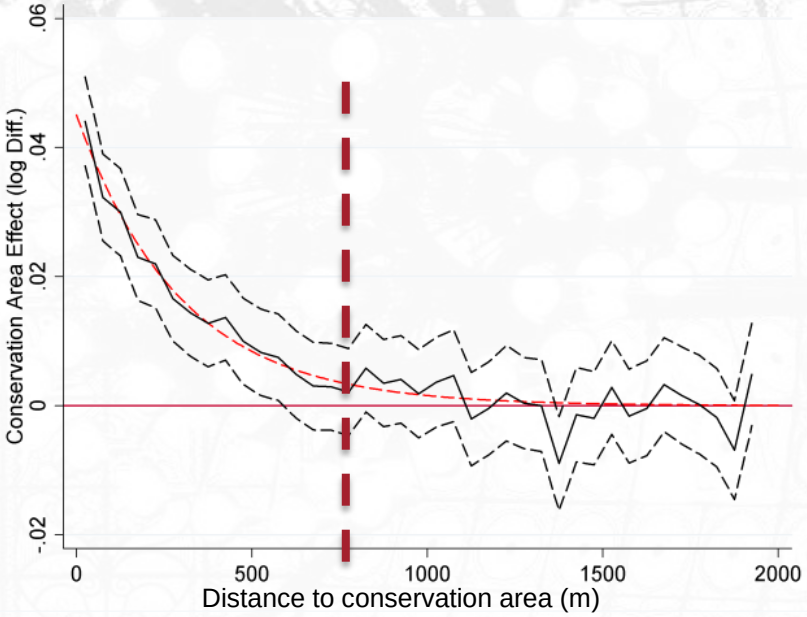
Significant aggregated external effect

Certificate II

Conservation Areas in England I

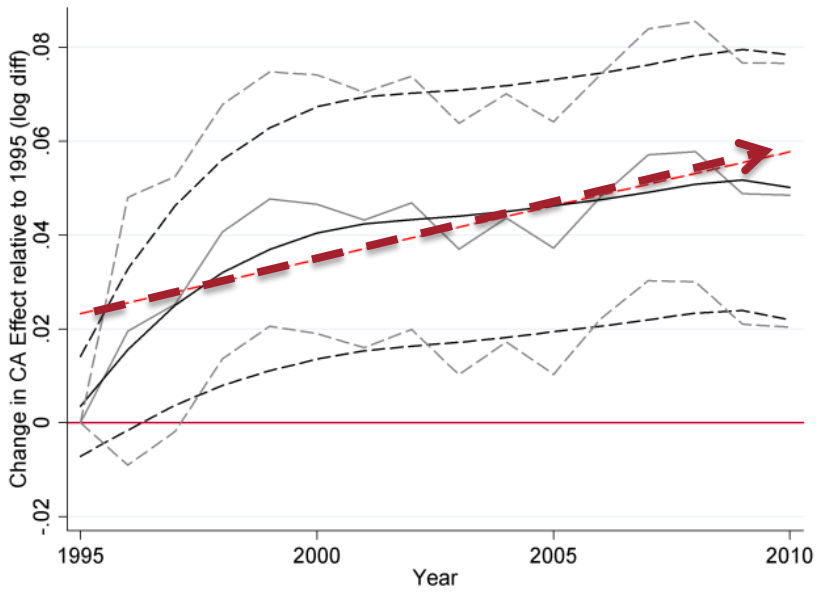
About 1000000 transactions

About 10000 conservation areas



Positive external price effects (WTP)

Up to 5-700m



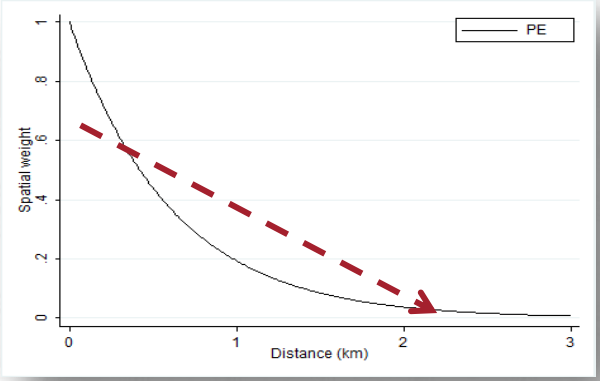
Premium increases over time

STARrchitecture Effects I

Empirical Evidence

About 7000 transactions

- **Frank Lloyd Wright** - „*Greatest American architect of all time*" (Brewster, 2004)"
  - Properties close to (25) **Frank Lloyd Wright** in Chicago buildings sell at **premiums** up to **5-8%** (Ahlfeldt/Mastro, 2011)
  - Effect decays in distance
  - Effect specific to particular architectural style?
    - Prairie style (1892 and 1914)

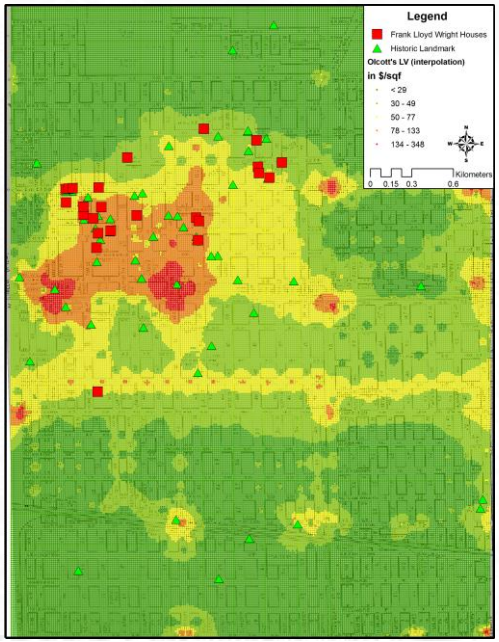


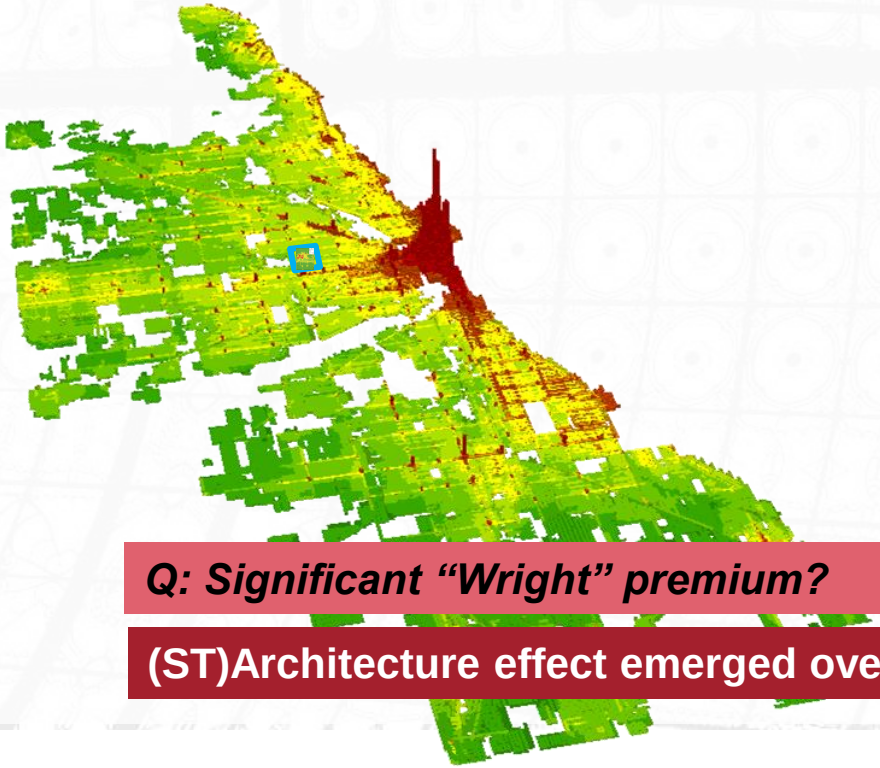
Positive external price effects (WTP)

STARrchitecture I

Empirical Evidence

- **Frank Lloyd Wright - „*Greatest American architect of all time*" (Brewster, 2004)"**
  - Oak park 100 years ago





Q: Significant "Wright" premium?

(ST)Architecture effect emerged over time!

STARchitecture II

Empirical Evidence

About 160000 statistical blocks

- **Modern STARchitects – 1950s elite**
  - Alto
  - Le Corbusier
  - Gropius
  - Jacobsen
  - Niemeyer
  - Scharoun
  - Tout

Positive price effects (WTP)

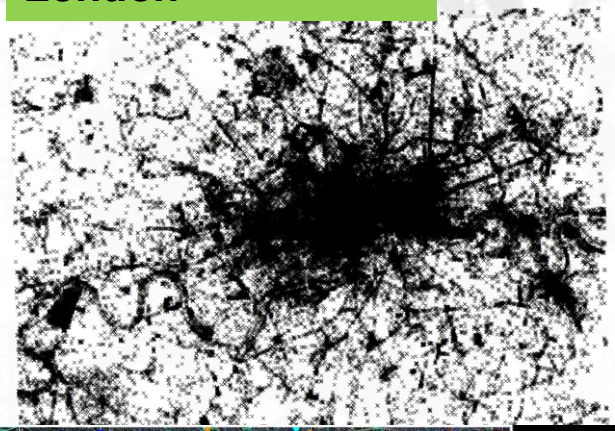
- Built the new „Hansaviertel“ in Berlin for the 1957 IBA
- More than 50 years later **land values** are **20%** higher than in comparable areas (total effect about €150 Mio).
  - „Modern“ architecture not dead (Jenks)

⇨ **Quality matters for „internal“ and „external“ effects**

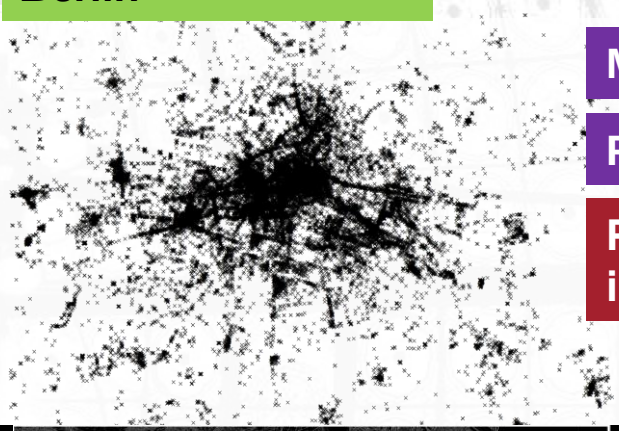
Revealed Preference

Amenities and Attraction

London



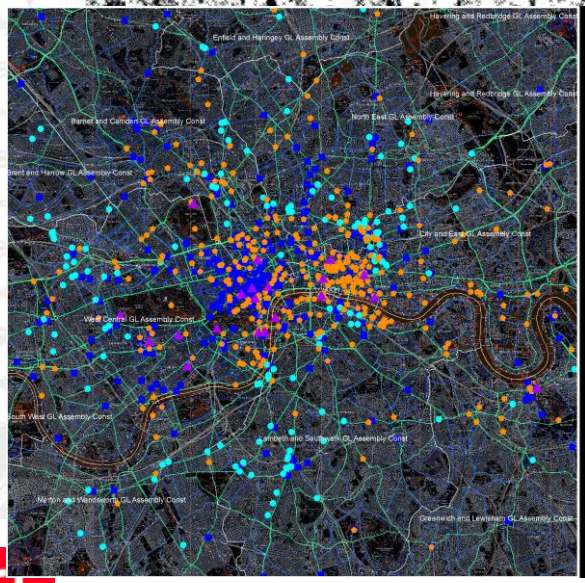
Berlin



Millions of photos

Flickr/Picasa

Places of "human interest"



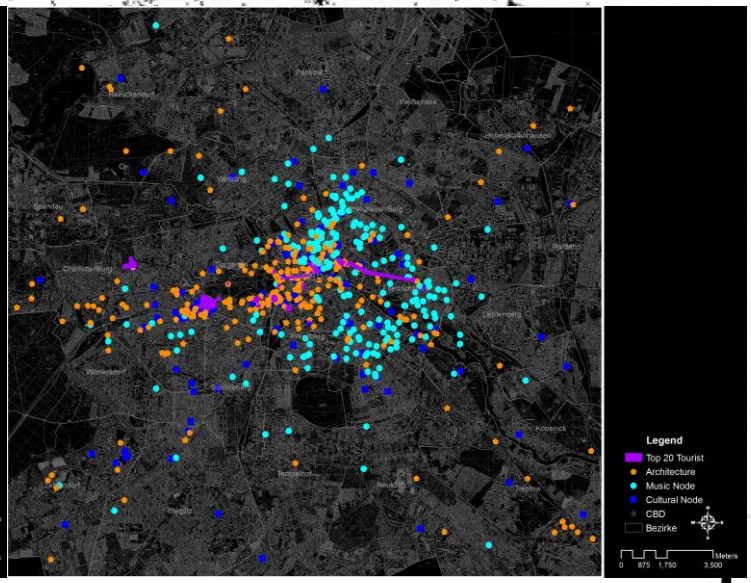
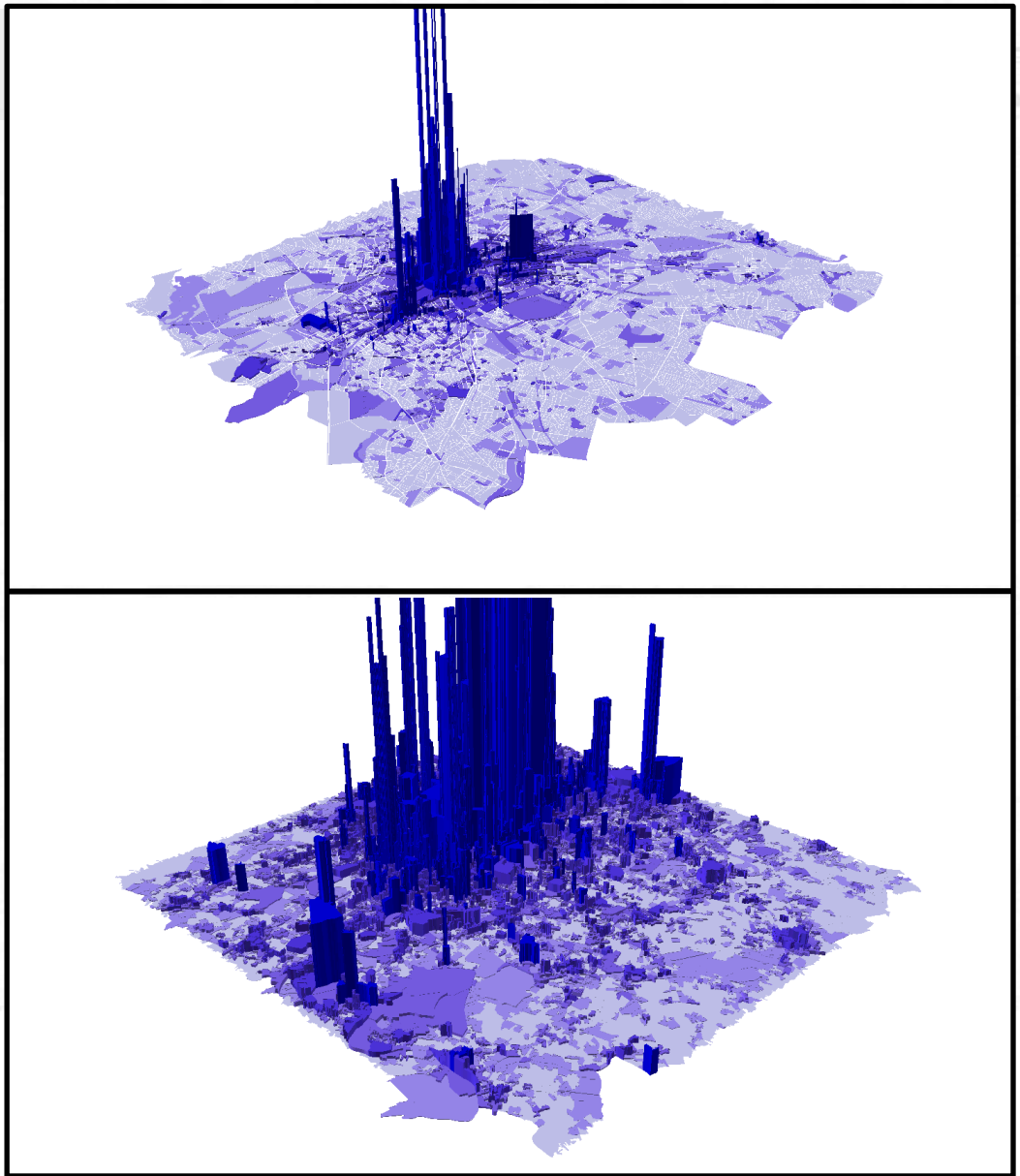


Photo Densities

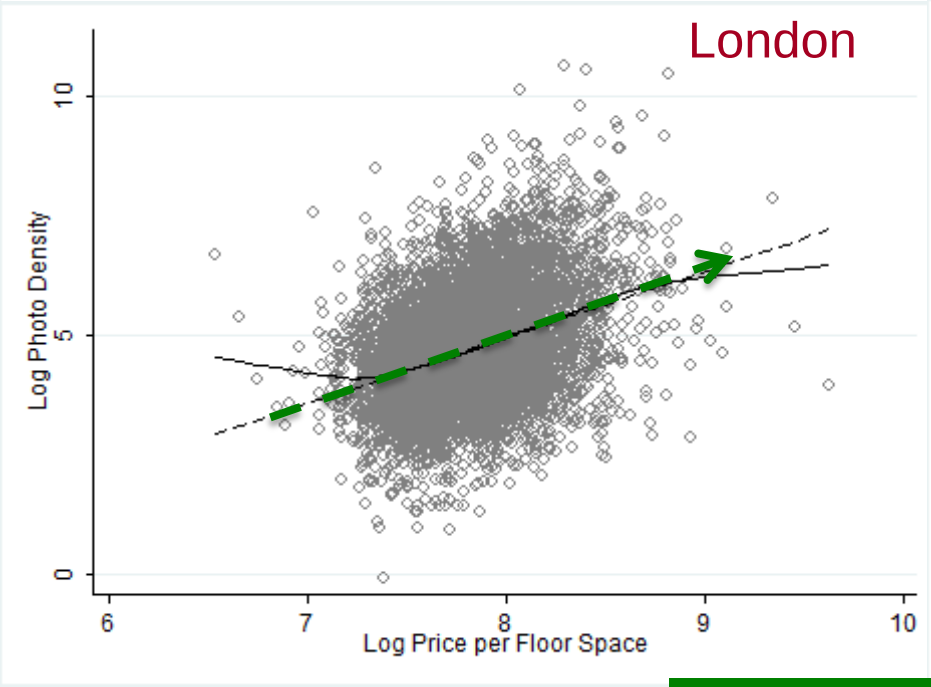


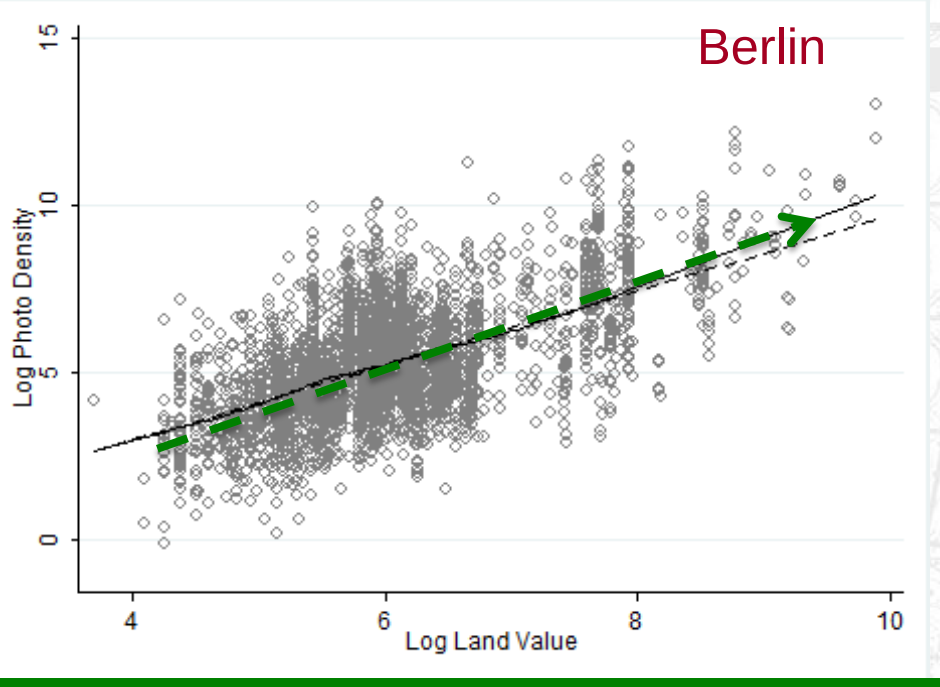
Revealed Preference Indicator

Aesthetic Quality & Willingness to Pay

- Photo densities and land values closely correlated

Willingness to pay for attractive space





Architecture impacts on property prices and photo nodes!

Stated vs. Revealed Preferences

Conservation Areas in England II

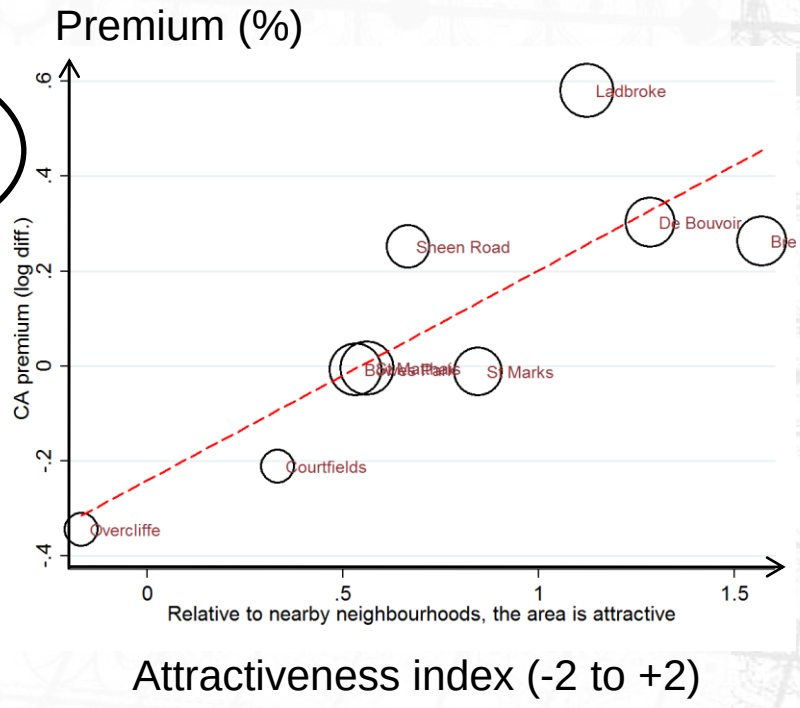
- **How to measure WTP for attractive (conservation) areas explicitly?**

Step I Compute conservation area premium in statistical analysis

```
. regress pri mpg wei for leng turn displ , cl(rep)

Regression with robust standard errors                Number of obs =      69
                                                      F( 3,     4) =       .
                                                      Prob > F      =       .
                                                      R-squared     =  0.5762
Number of clusters (rep78) = 5                        Root MSE      =  1985.6

------------------------------------------------------------------------------
             |               Robust
       price |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         mpg |  -18.41022   55.51588    -0.33   0.757    -172.547    135.7266
      weight |   4.751837   .5855439     8.12   0.001     3.126106    6.377567
     foreign |   3495.959   918.6167     3.81   0.019     945.4697    6046.447
      length |  -78.42922   19.06622    -4.11   0.015    -131.3655   -25.49292
        turn |  -128.8468   132.6541    -0.97   0.386    -497.1536    239.46
displacement |   11.1948    2.387374     4.69   0.009     4.566391    17.82322
       _cons |   8744.885   8998.512     0.97   0.386    -16238.99    33728.76
------------------------------------------------------------------------------
```



Step II Ask residents to rank the quality of the built environment

Willingness to pay for attractive space!

Conclusion

Architectural Economics

- **Positive WTP for architecture**
  - External price effect exist that cannot be traded on the market
    - WTP for living near to signature buildings (historic and contemporary)
  - Attraction effects – architecture attracts photo activity
  - Stated preferences – higher (conservation) areas premia in more attractive area
- **Market failure**
  - Policy – increase welfare via historic preservation, design standards, etc.
  - Markets – increase revenues via coordination
- **Limitation: No cost-benefit analysis!**

Appendix

Compensating Differentials

How to Measure?

- **All heritage effects (policy/internal/external) compensated in rents/prices**

- **"Bid-rent" is a function**

$$R = f(HED) + g(LOC) + D + h(X), h'(X) < 0$$

- Estimated using multivariate regressions (Rosen, 1972)

- Aggregate external effect

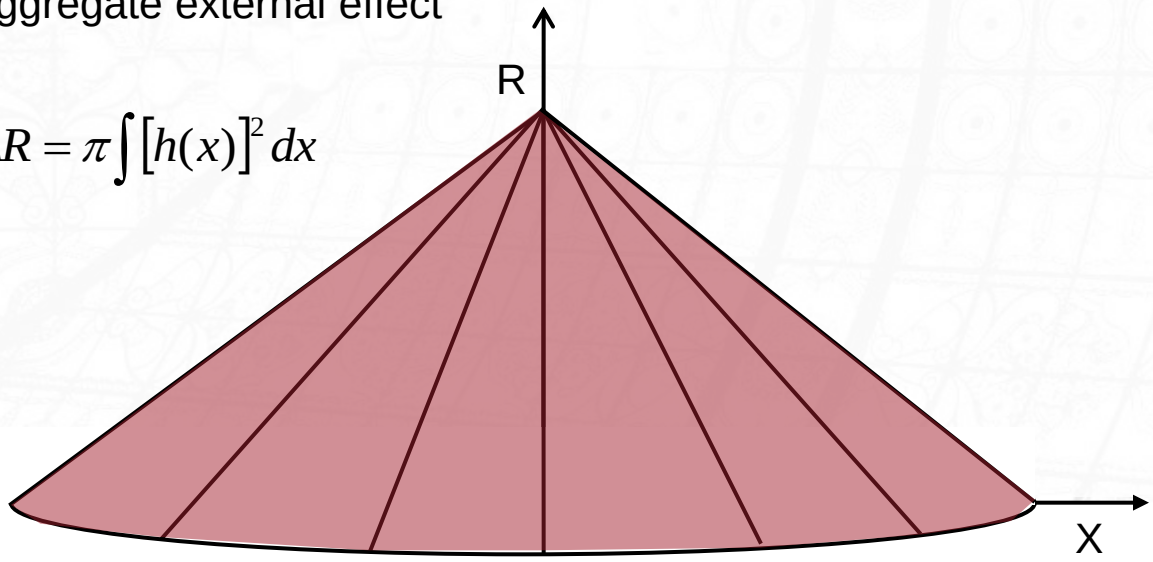
$$AR = \pi \int [h(x)]^2 dx$$

Housing characteristics

Location characteristics

Designation effect

Heritage spillover



Private vs. Social Optimum

Welfare Economics

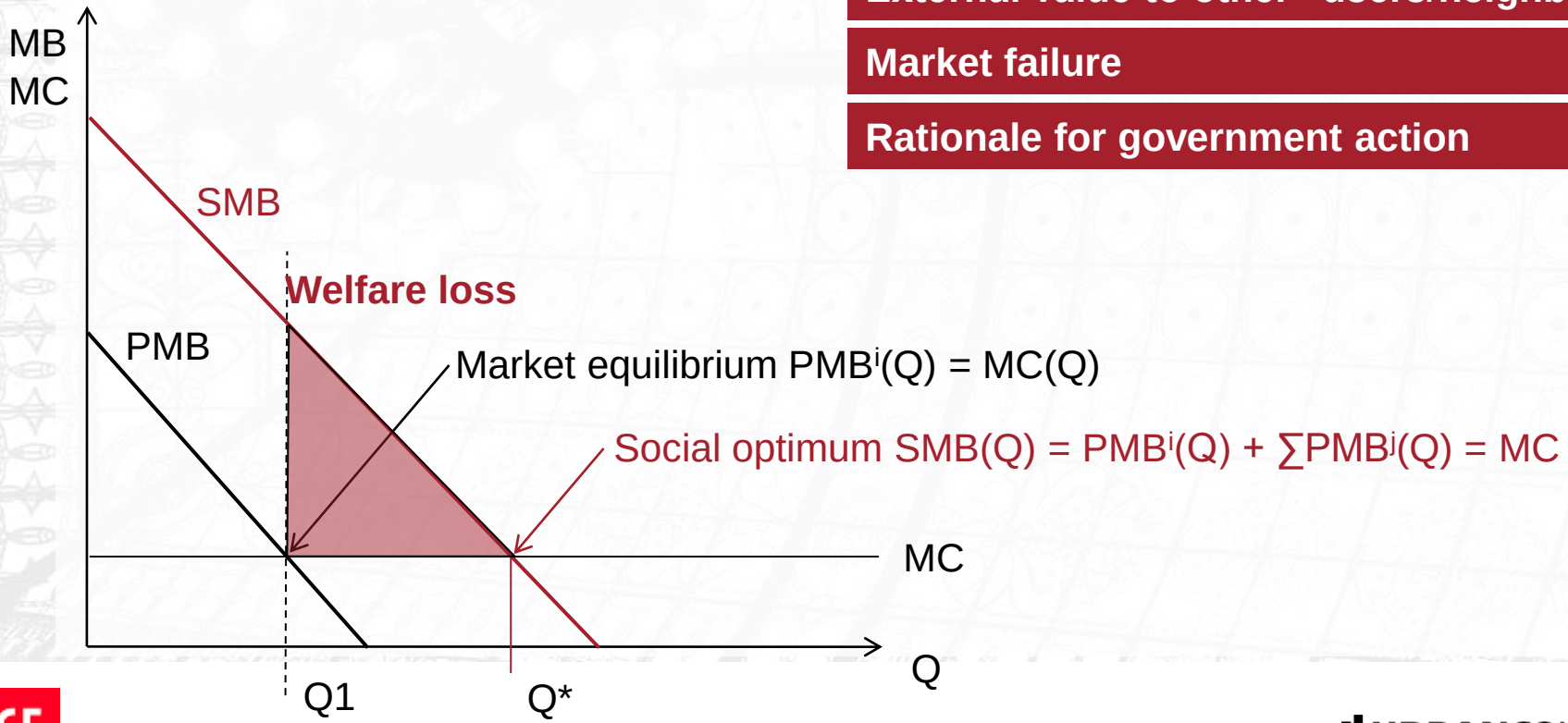
Willingness to pay for signature buildings

"Implicit" (marginal) costs of architecture

External value to other "users/neighbours"

Market failure

Rationale for government action



Introduction & Outline

Architectural Economics

- **(I) Architecture & Economics**
  - Is the market equilibrium efficient (welfare economics)?
- **(II) Measuring Architectural *Externalities***
  - How to measure architectural value? (avoid individual judgement)
  - Evidence (focus on historic buildings)
    - Willingness to pay
    - Attraction effects
    - Revealed vs. stated preferences

Scope & Limits

Welfare Economics

- **Perceived value** — **External effects (WTP) indicates ONE problem**
  - Existing valuation, Current people, Current buildings, Current preferences
  - **Demand exists – but there is not market**
- **No cost-benefit analysis**
  - Architecture can be (does not have to be) costly
  - There are costs to regulation
- **Other/broader debates**
  - “Cultural” value
  - Demand of future generations (*option* demand and *bequest* value)
  - ...

Efficiency

Why Care?

- **Q: Is the market equilibrium efficient (welfare economics)?**
  - Are private investment decisions socially optimal?