



BORROWED SIZE, AGGLOMERATION SHADOWS AND CULTURAL AMENITIES IN NORTH WEST EUROPE

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CONSUMER CITY

- Dominant view among economists: Cities are good for production and bad for consumption.
 - Firms and workers earn more in cities.
 - Workers pay higher rents, commute longer and face more crime in cities.
- Nevertheless, the success of cities hinges more and more on cities' role as centres of consumption (Glaeser et al., 2001; Rappaport, 2008).
- People are willing to give up real wage to enjoy consumption amenities that are typically found in large cities (Tabuchi and Yoshida, 2000).



AMENITIES IN CITIES AND REGIONS

- Traditionally, consumer amenities are known to be strongly dependent on the size of local population (Berry and Parr, 1988).
- Nevertheless, little is known how the how the position of a location in an urban system affects the level of consumer amenities in that location.
- This is, however, important to explore in the light of changing spatial structures.

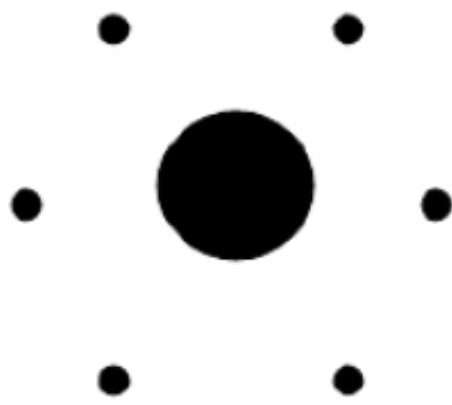


CHANGING SPATIAL STRUCTURE

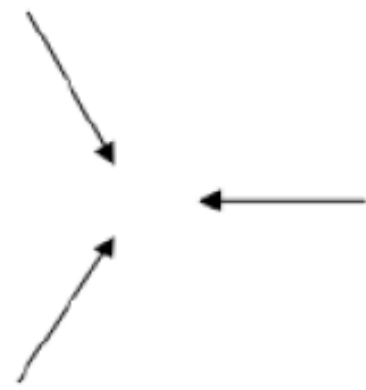
- The spatial extent of social and economic relationships is steadily increasing.
- Development of subcenters and satellite cities, where traditional centre loses importance as population, market, and employment centre to other locations.
- Where in the past most social and economic relationships were predominantly local, locations become increasingly linked to form larger functional urban areas.



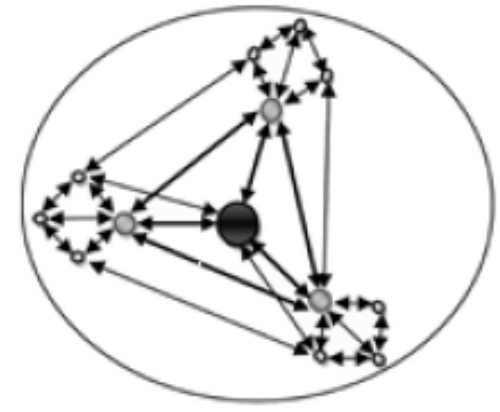
Old Situation



Monocentric

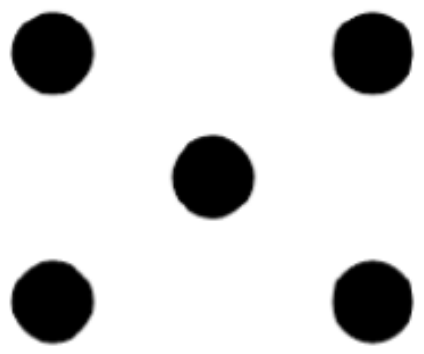


Non-Integrated

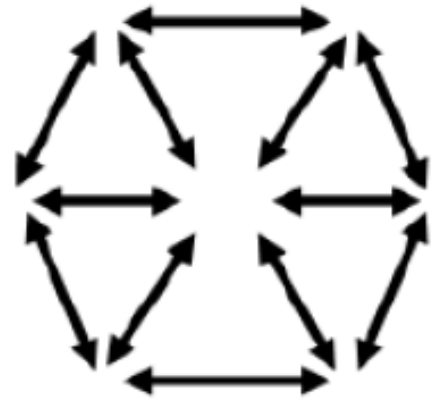


Intra-Regional

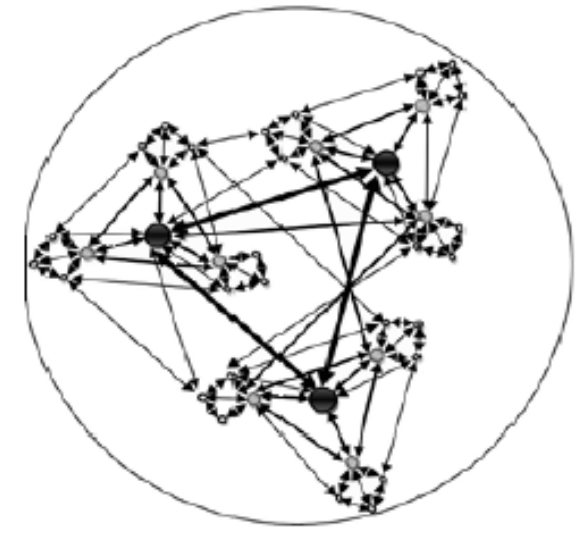
New Situation



Polycentric



Integrated



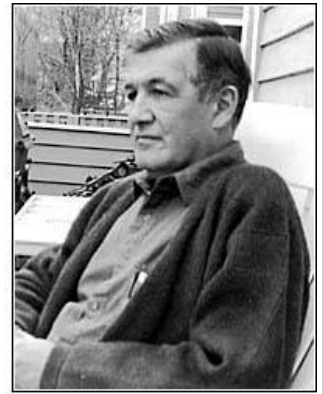
Inter-Regional

AMENITIES IN URBAN NETWORKS

- Within such networked constellations, there is not necessarily a relationship between the size of place and the functions it fulfils.
 - The critical mass to support particular amenities can be obtained from the wider urban network.
- Scenario 1: Smaller places can ‘borrow size’ and host functions that they could not have hosted in isolation.
- Scenario 2: Increased spatial competition in close proximity to urban agglomerations can drift away amenities from smaller places, which lie in an ‘agglomeration shadow’.



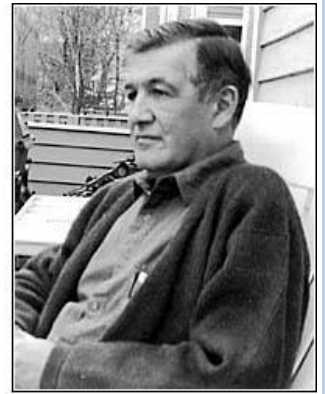
THE CONCEPT OF 'BORROWED SIZE'



- Alonso in *Daedalus* (1973: 200)
- Addressing the Northeast of the USA: *'[t]he concept of a system of cities has many facets, but one of particular interest ... is the concept of borrowed size, whereby a small city or metropolitan area exhibits some of the characteristics of a larger one if it is near other population concentrations'* (Alonso, 1973:200).
 - Smaller urban areas enjoy (or 'borrow') some of the urbanization economies of their larger neighbours.



THE CONCEPT OF 'BORROWED SIZE'



- Alonso in *Daedalus* (1973: 200)
- Processes of borrowed size are '*also quite visible... in Germany and the Low Countries, whose cities, quite small by our standards, apparently achieve sufficient scale for the functioning a modern economy by borrowing size from one another*'



THE CONCEPT OF AGGLOMERATION SHADOWS

- Locations cannot only 'borrow size' from other location in the urban system, they also face competition effects → 'agglomeration shadows' (Fujita et al., 1999; Dobkins & Ioannides, 2001; Partridge et al., 2009).
- Growth near (higher tier) agglomerations will be limited due to competition effects.
- It can be expected that places in proximity to large cities have fewer consumer amenities than isolated places of similar size.



BORROWED SIZE, AGGLOMERATION SHADOWS AND CULTURAL AMENITIES

- Challenge: conceptualize and measure borrowed size and agglomeration shadows.
- To what extent do cultural amenities in a place depend on the size of the local population, population in the rest of the region and (inter)national accessibility?
- How does a location's position in the (regional) urban system influences its capacity to borrow size?



DATA

- BBSR (2011): High-end cultural amenities in Western Europe (2006-2007).
 - Venues: theatres, operas, music theatres, galleries, and public art institutions
 - Events: concerts, arts exhibitions, film festivals
- Location with most amenities receives a score of 1.
- All other locations receive a score relative to the highest ranked city. Minimum score is 0.



DATA

- ESPON databases on Functional Urban Areas
Eurostat data on population.
 - FUA: Integrated metropolitan regions; daily activity spaces
 - Delimited based on commuting data
 - Over 331 FUAs in Western Europe, ranging from very small (10000 inhabitants) to very large ().
- Population data from Eurostat
- Control variable: regional GDP per capita, cultural heritage site dummy, and country dummies.



DISTRIBUTION CULTURAL AMENITIES

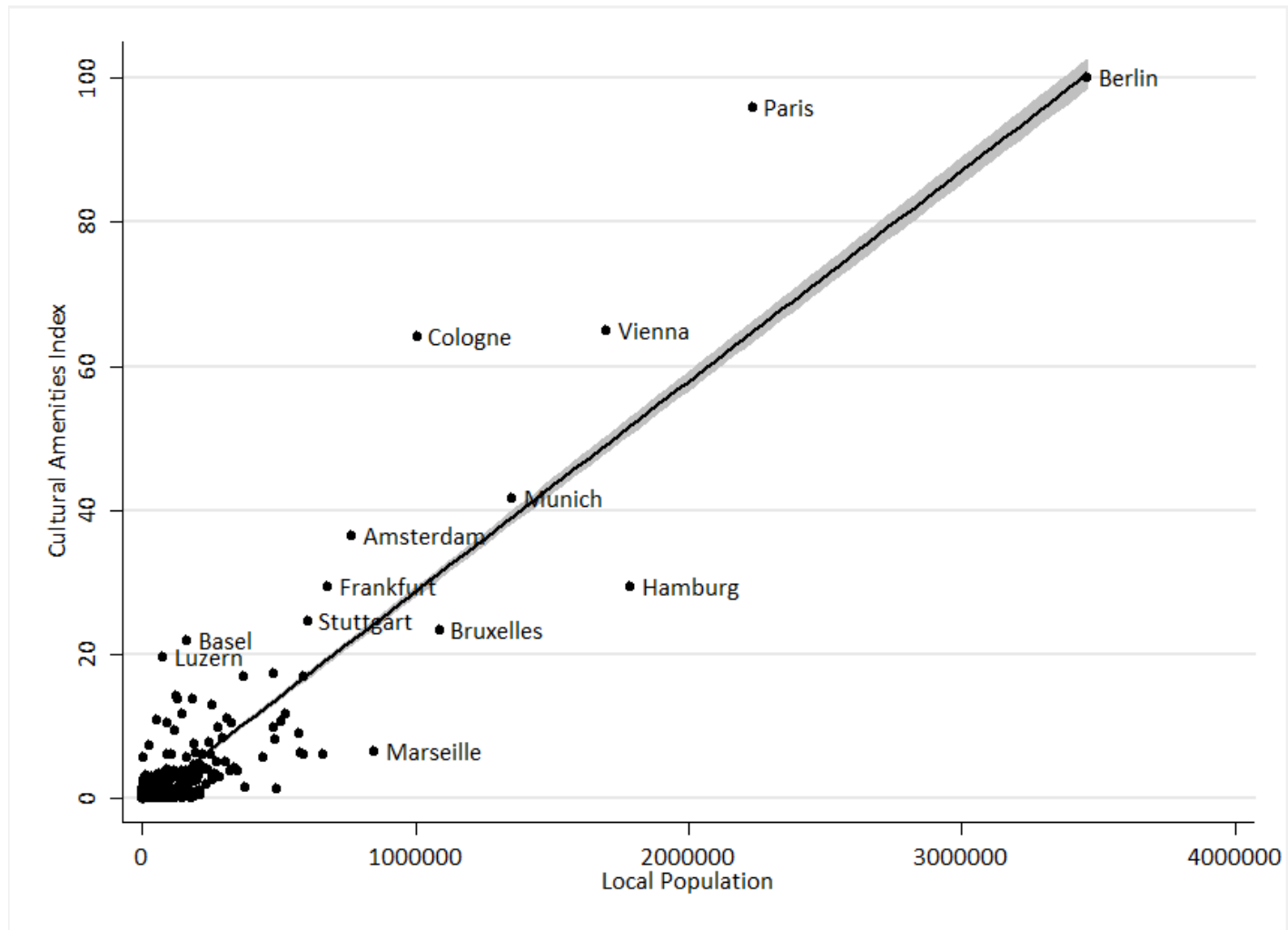


CULTURAL AMENITIES IN WESTERN EUROPE

Location (LAU-2)	Cultural Amenities Index	Population (millions)
Berlin	1.00	3.46
Paris	0.96	2.23
Vienna	0.65	1.70
Cologne	0.64	1.01
Munich	0.42	1.35
Amsterdam	0.36	0.77
Hamburg	0.29	1.79
Frankfurt am Main	0.29	0.68
Stuttgart	0.25	0.61
Brussels	0.23	1.09



DISTRIBUTION CULTURAL AMENITIES



EMPIRICAL STRATEGY

- A positive effect of the population in the rest of the FUA and accessibility on the presence of high-end cultural amenities would indicate the presence of borrowed size effects.
- A negative effect of the population in the rest of the FUA and accessibility on the presence of high-end cultural amenities would indicate the presence of agglomeration shadows effects.



EMPIRICAL STRATEGY

- Link the presence of cultural amenities to local size, size of the rest of the FUA and (inter)national accessibility as well as the position of a location in its FUA.
- Given the nature of our dependent variable (an index or proportion), we use a zero-and-one inflated beta regression (Cook et al., 2008; Ospina and Ferrari, 2012).



DESCRIPTIVE STATISTICS

	Mean	Standard Deviation	Minimum	Maximum
Cultural Amenities Index	0.0047	0.037	0	1
Local population (100K)	0.32	1.13	0.00061	34.61
Population rest FUA (mln)	2.16	3.07	0	11.17
(Inter)national accessibility (10mln)	6.85	1.51	2.96	10.01
GDP per capita FUA (K)	32.39	8.47	13.00	54.00
Dummy heritage site	0.02	0.15	0	1
Dummy not largest place in FUA	0.85	0.35	0	1
- Dummy second largest place in FUA	0.11	0.32	0	1
- Dummy third largest place in FUA	0.08	0.29	0	1
- Dummy fourth largest place in FUA	0.07	0.25	0	1
- Dummy other not largest places in FUA	0.58	0.49	0	1

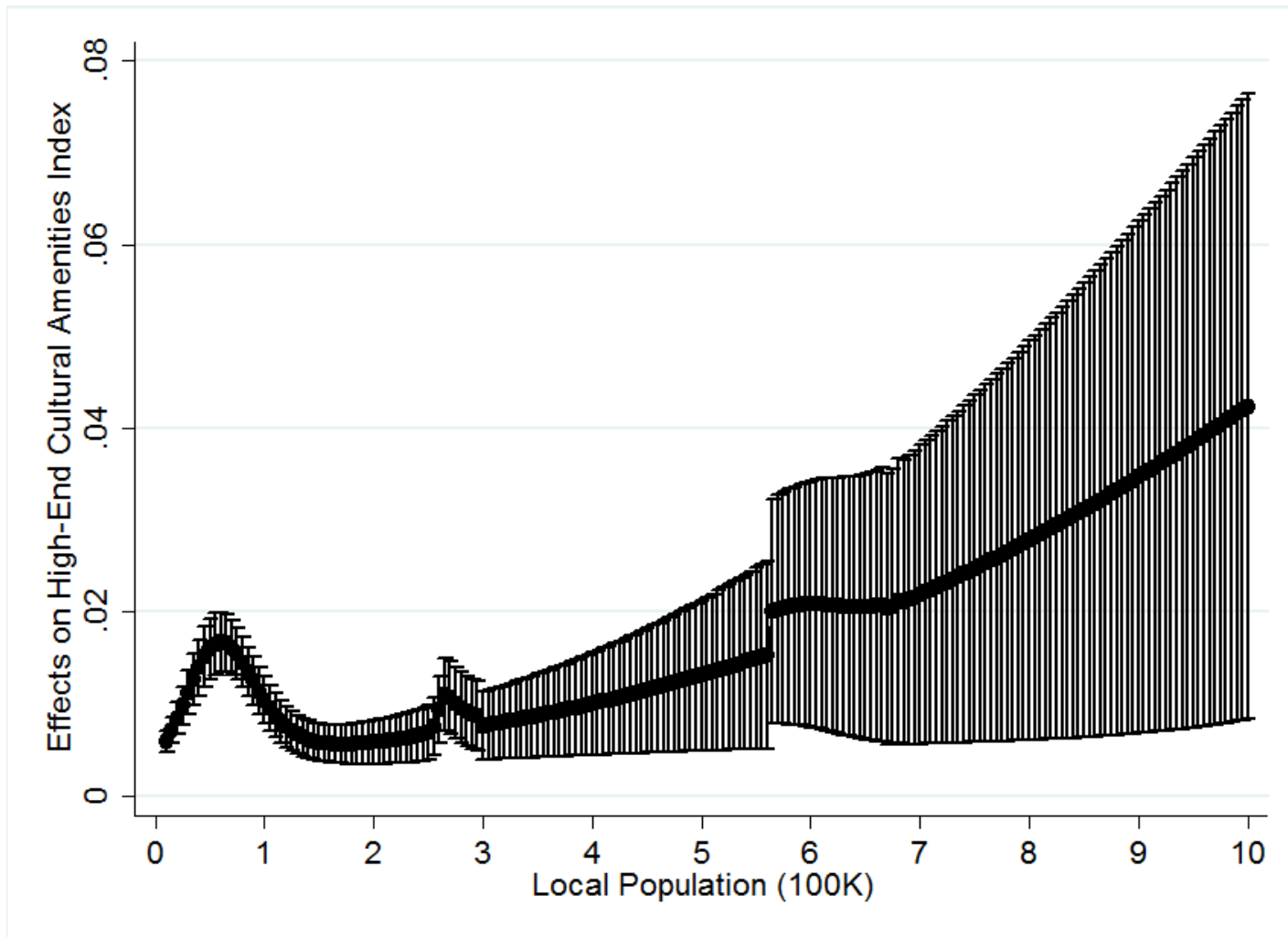


EMPIRICAL RESULTS – AVERAGE MARGINAL EFFECTS

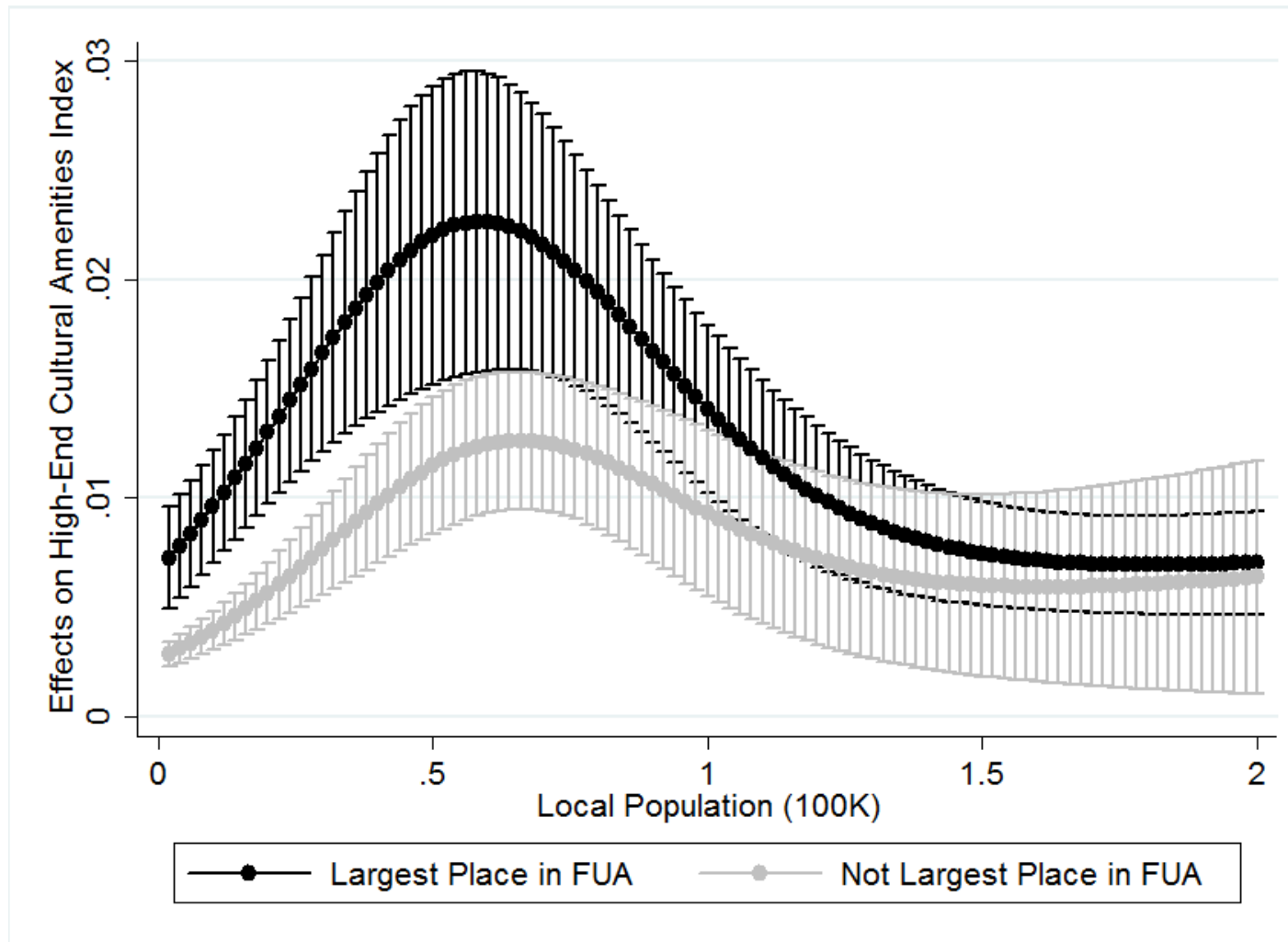
	Model 1	Model 2	Model 3
Proportion Part			
Local population (100K)	0.0071 (.0006)**	0.0057 (.0005)**	0.0056 (.0005)**
Population rest FUA (mln)	-0.0002 (.0001)	-0.0000 (.0001)	0.0001 (.0001)
(Inter)national accessibility (10mln)	-0.0001 (.0001)	0.0001 (.0001)	0.0001 (.0001)
GDP per capita FUA (K)	0.0000 (.0000)	0.0001 (.0000)*	0.0001 (.0000)*
Dummy heritage site	0.0037 (.0009)**	0.0029 (.0009)**	0.0029 (.0008)**
Dummy not largest location in FUA		-0.0030 (.0004)**	
- <i>Second largest location in FUA</i>			-0.0022 (.0004)**
- <i>Third largest location in FUA</i>			-0.0031 (.0005)**
- <i>Fourth largest location in FUA</i>			-0.0032 (.0005)**
- <i>Other not largest locations in FUA</i>			-0.0040 (.0005)**



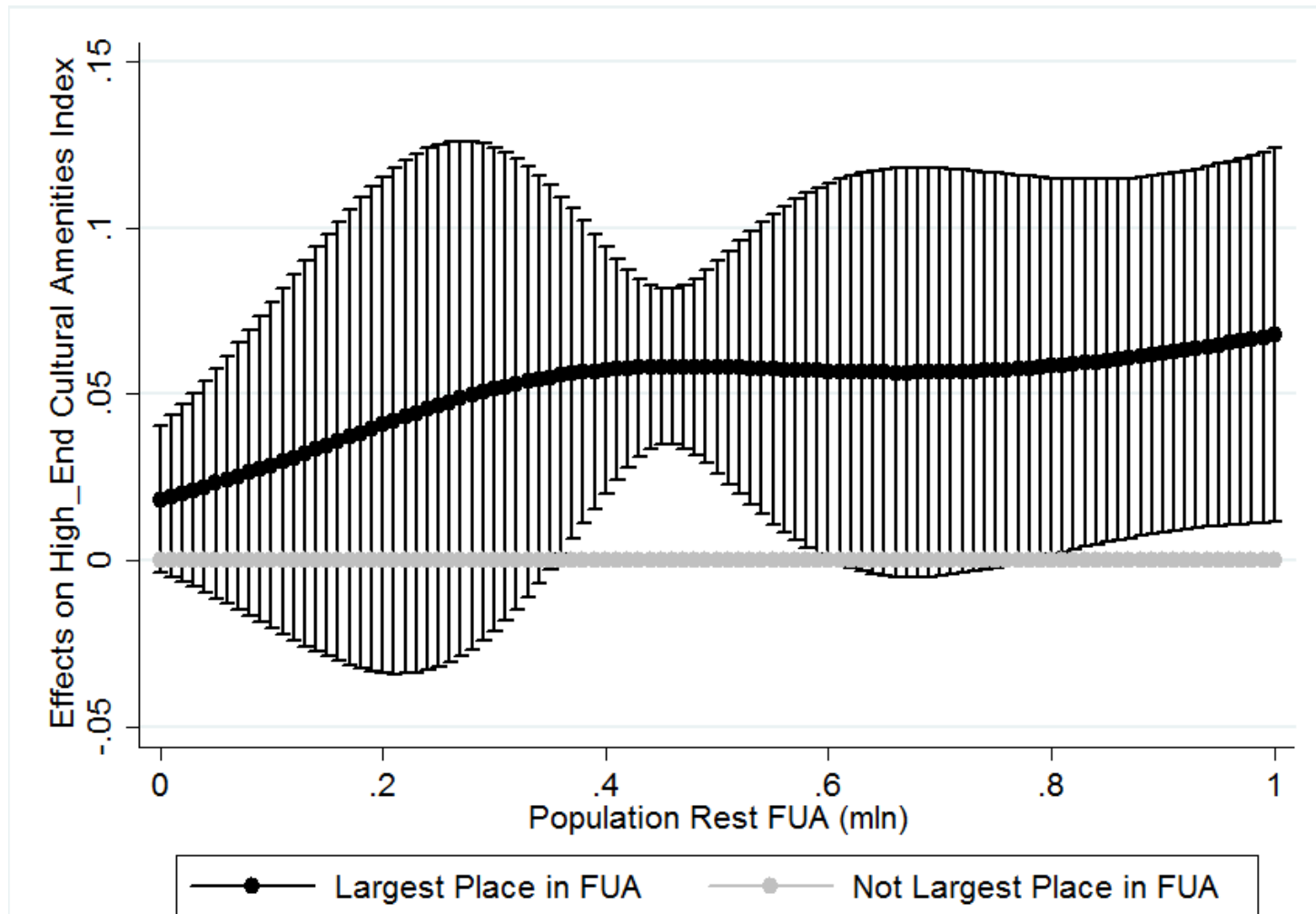
POPULATION THRESHOLDS



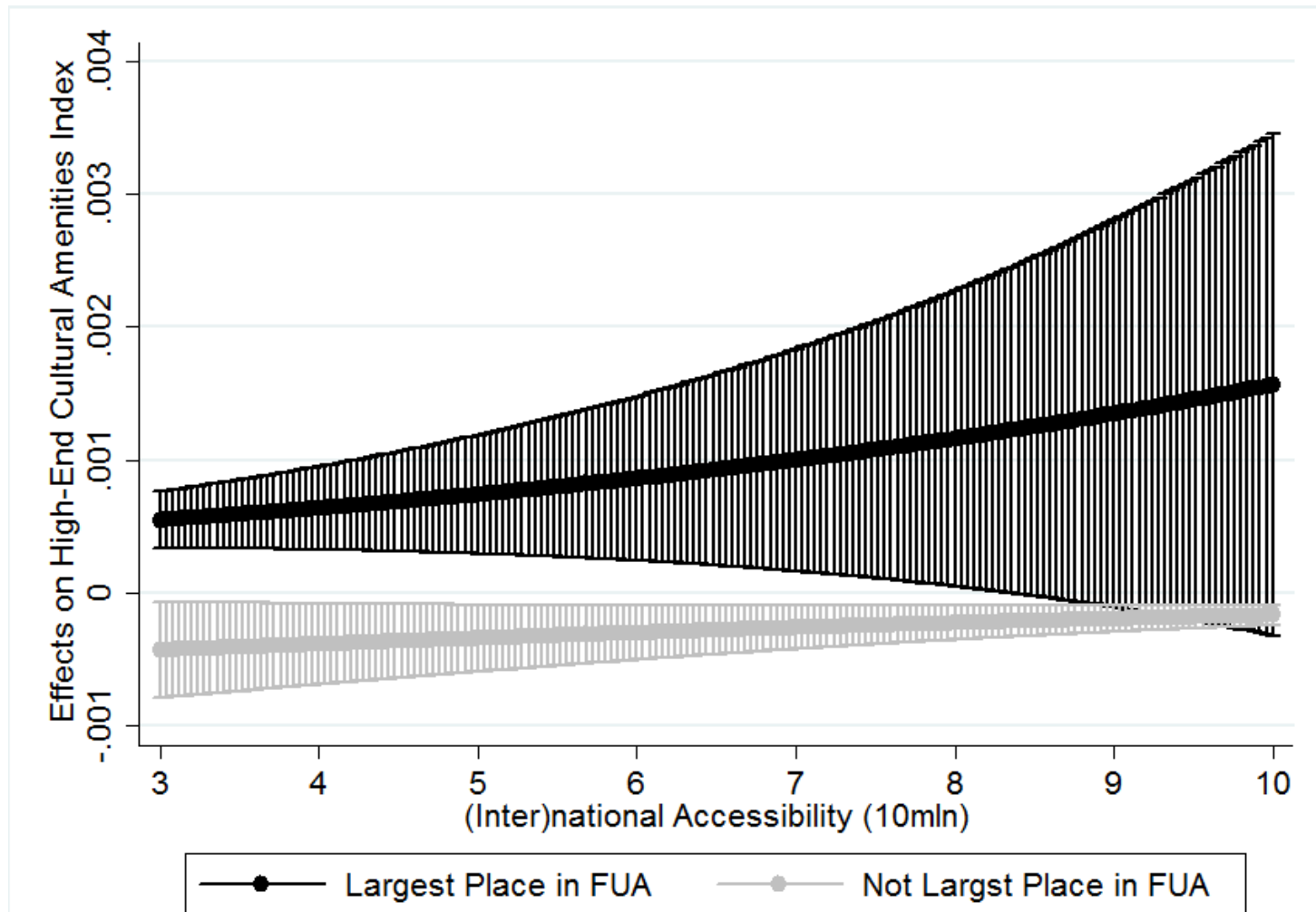
EXPLOITING LOCAL POTENTIAL



EXPLOITING REGIONAL POTENTIAL



EXPLOITING (INTER)NATIONAL ACCESSIBILITY



CONCLUSIONS

- Size of a place is the most important factor explaining the presence of cultural amenities; size of the rest of the region and accessibility of the region matter less.
- However, presence of amenities is also strongly dependent on the position of a location within a region:
 - Amenities are disproportionately concentrated in the most central locations.
 - Especially small places that are largest in their FUA host more amenities than you would expect based on their size.
 - Places profit more from the size of the rest of the FUA and (inter)national accessibility when they are the largest place within their FUA.



CONCLUSIONS

- Distribution of high-end cultural amenities in North West Europe still follows a Christallerian logic.
- Larger cities cast a shadow over smaller neighbouring cities (as predicted by the New Economic Geography) rather than these smaller cities borrowing size from their larger neighbour (as suggested by Alonso).



FUTURE RESEARCH

- Small- and medium-sized cities near large urban agglomerations do not necessarily have to be confined to lower-end cultural amenities.
 - Focus on a broader set of cultural amenities
 - Focus on a larger variety of urban functions
- Could well be that the complementarity of urban functions between places comprising a metropolitan region is the key to understanding processes of borrowed size and agglomeration shadows.
- A place faces an agglomeration shadow in one respect can borrows size in another.

