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Urban
Transport
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Sports
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Blessing or Curse? Appreciation, Amenities and Resistance around the Berlin "Mediaspree"[*]

Abstract: This article investigates the 2008 referendum held in opposition against the "Mediaspree", a major urban development project in Berlin that has been perceived as a threat of displacement of local residents and culture. Using precinct level data we find a high degree of localized resistance around the project area, conditional on socio-demographic characteristics. Comparison to local appreciation rates shows that in an environment of very low owner occupancy public (re)development projects are opposed the more residents associate an increase in area valuation. This effects is, however, not strong enough to explain the localized resistance. Considering a micro-level data set on music nodes, our results suggest that resistance is rather attributable to a feared loss of specific cultural amenities and neighborhood character.

Keywords:Cultural Amenities, Urban Development, Displacement, Hedonic Modeling; Mediaspree
JEL classification: Z10, R20
Version: February 2010

1 Introductions

In recent decades residential downtown areas in the U.S. as well as Europe have experienced a remarkable comeback after a long period of steady decline accompanied by the migration of middle- and upper-class residents to the city fringe. The rediscovery of downtown areas has been explained in economic terms by a relative reduction in transport costs for the poor, which has reduced the comparable advantage of the rich at the city fringe (LEROY & SONSTELIE, 1983), or by the modernization of downtown housing stock, which increases the demand of high-income households (BRUECKNER & ROSENTHAL, 2005). In addition,

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lifestyle pluralization (VEAL, 1993) has produced new upper and middle social classes such as FLORIDA's (2002) prominent *creative class*, whose highly skilled members appreciate the vitality as well as the cultural and social diversity of the inner-cities. At the same time, ambitious authorities have developed revitalization strategies in order to promote the so-called *urban renaissance* (DETR, 1999).

The (re-)invasion of residential downtown areas by high- and middle classes – usually called *gentrification* – has raised many questions about what happens to the established residents, who may experience a demand driven increase in the cost for living space and, hence, displacement pressures. Typically, revitalization strategies that aim to improve neighborhood quality induce fear and anger about potential displacement and loss of local culture and networks. Such an opposition stands in contrast to the idea of "home-voters" who support public projects that are expected to raise property values (BRUNNER & SONSTELIE, 2003; DEHRING, DEPKEN, & WARD, 2008; FISCHEL, 2001). A key to understanding such different perspectives naturally lies in the rate of owner occupancy within the neighborhood where the revitalization strategy operates.

We add to the literature by investigating the case of the "Mediaspree", a riverside urban development project within the eastern downtown area in Berlin, Germany, which is carried out in a public private partnership. The project is embedded into adjoining areas to both riversides of the Spree that belong to the major urban redevelopment programs "Stadtumbau Ost" and "Stadtumbau West". The considered development and revitalization areas locate within the district Friedrichshain-Kreuzberg, which has become one of the most scenic areas in post-unification Berlin. The riversides of the river Spree, which offered plenty of unoccupied space, emerged as a worldwide hotspot of alternative music culture during the recent decades. The mixture of large scale urban development programs encompassing considerable public investment and a fertile cultural environment eventually attracted international music enterprises like Universal and MTV as well as households belonging to higher income classes, the so called *gentrifiers*. While gentrification was still at an early stage, the "Mediaspree" project by the end of the 2000s was increasingly perceived as an accelerator of neighborhood

change and a threat to neighborhood stability. From this relatively typical conflict a strong neighborhood resistance movement emerged. A citizen's initiative enforced a public referendum against the "Mediaspree", which was held in 2008 and was supported by as much as 87% of the voters who engaged in the referendum.

Notably, our study area covering the city district Friedrichshain-Kreuzberg not only represents a typical early stage gentrification area, with conflicts between the traditional lower-class inhabitants, pioneers and gentrifiers, but also an extreme case of low owner occupancy. We have taken the opportunity to investigate the main driving forces of neighborhood resistance on the basis of the stated preferences of tens of thousands of voters participating in the referendum. We conduct a spatial precinct level analysis that, besides socio-demographic characteristics and political orientation of the resident population, considers the local evolution of apartment prices and the endowment with specific cultural amenities. We do this to evaluate whether a) there is evidence for a local increase in demand for living space induced by the development and revitalization projects and b) local appreciation as an objective measure of displacement pressure explains the spatial pattern of resistance revealed by the referendum or c) resistance is driven by an expected disutility from a loss of "neighborhood charm" that is mainly constituted by the presence of very particular cultural amenities.

The next section provides a more detailed description of our study area on the background of the related gentrification literature. Our empirical analysis follows in a tripartite structure, focusing on spatial patterns in the voting results (3.1), appreciation rates (3.2) and the interaction of both as well as the role of the local cultural geography.

2 Gentrification around the "Mediaspree"

The situation within the study area covering the sub-districts Friedrichshain and Kreuzberg can be reasonably well described on the background of a huge body of *gentrification* research, which since the 1970s increasingly has engaged with the phenomenon of neighborhood change in inner-city areas. Although different academic disciplines, town planners or journalists have developed their particular

perspectives on the phenomenon, displacement of local residents and a change of a neighborhood's character due to an inflow of higher income/status households clearly emerge as a common theme from the literature (e.g. ATKINSON, 2004; FREEMAN & BRACONI, 2004; MARCUSE, 2005). Accordingly, the inflow of wealthier residents brings with it increasing housing prices and rent levels, which mirror the increased attractiveness of the area, and puts a pressure on households facing tighter budget constraints.[1] Over the decades the literature on gentrification has become more and more extensive and sophisticated, addressing both demand (e.g. the *emancipatory city*) and supply (e.g. the *revanchist* city) side explanations (BUTLER, 1997; CAUFIELD, 1994; LEY, 1996; SMITH, 1996) as well as an increasing number of more specific issues like super-gentrification, ethnic minority gentrification or the effect of gentrification on participation in democracy (KNOTTS & HASPEL, 2006).[2] Urban economics research searches for determinants of gentrification on the basis of formal models, paying special attention to the age and quality of housing stock (BRUECKNER & ROSENTHAL, 2005) and the affordability of urban high-speed transport (LEROY & SONSTELIE, 1983).

The German literature on gentrification is dominated by stage models (e.g. FRIEDRICHS, 2000) which more or less build on the work of CLAY (1979) and fit relatively well to the case of Friedrichshain-Kreuzberg. Accordingly, there is a pioneering generation of risk affine singles or two-person households without children, typically students or creative professionals, who have a relatively low income but a higher education compared to the residents living within the neighborhood to which they immigrate. Usually, pioneers feel attracted by relatively affordable living space within highly accessible inner-city neighborhoods with an urban fabric of pre-World War II buildings, which will typically be in a bad physical condition. These minimum criteria are easily met by our subject area, which is connected by numerous underground, suburban railway and streetcar lines and whose

[1] A number of recent empirical studies suggest that, in practice, displacement of low-income households only occurs to a relatively limited degree (FREEMAN & BRACONI, 2002; VIGDOR, 2002). NEWMAN & WYLY (2006), however, argue that such figures usually underestimate displacement due to neglecting households that left cities, doubled up with other households, became homeless or entered the shelter system.

[2] See e.g. LEES (2000) for a survey.

building stock is largely formed by downtown blocks developed at the end of the 19th century. The riverbanks of the Spree, which represents the natural border between Friedrichshain and Kreuzberg as well as former East- and West-Berlin, furthermore represent a highly attractive natural amenity. While the pioneer stage of gentrification in Friedrichshain began not earlier than after the fall of the iron curtain, it is notable that Kreuzberg, by the time of Germany's unification, was not only inhabited by classical working-class and migrant milieus, but also represented a center of left-side politicized milieus with roots in the 1970s' autonomists scene. Initially, the neighborhood change after unification occurred at a relatively low speed, in particular on the Kreuzberg side, since the downtown areas of Mitte and Prenzlauer Berg stood in the focus of pioneers who moved to Berlin in search of a vivid and scenic lifestyle. As these areas entered the second stage of gentrification and increasingly attracted higher-income gentrifiers, the pioneers turned their attention to Friedrichshain and Kreuzberg. The riverbanks offered large attractive areas that, particularly on the Friedrichshain side, were only sparsely developed and qualified as very attractive sites for alternative cultural activities with an initially temporal character.

To understand the character of the neighborhood it is important to note that, by the same time, Berlin experienced a rise to one of the most important hotspots for in particular electronic music and club culture, which increasingly occupied the open spaces and abandoned industrial buildings along the riversides within our study area. By the mid-2000s the border area between the districts had finally developed to one of the densest clusters of contemporary electronic music in the world. Besides music clubs such as Berghain and the Watergate, which both feature among the top ranked clubs world-wide (DJMAG, 2009), clubs like the Maria, which has long collaborated with the international arts and media festival *transmediale*, and open-air locations like Bar 25 or the Club der Visionäre (CDV) became internationally prominent and were used as sceneries for numerous movies and novels. Together with a number of additional clubs (Tresor, 103 club) open air bars (YAAM, Kiki Blofeld, etc.) labels (e.g. Groove) and record stores (e.g. Hardwaxx) these locations achieved a legendary character even at an international scale, attracting a new form of party tourism, which the literature has named

"*easyjetset*" (RAPP, 2009).[3] In sum, the area represents one the most important music clusters within a city that is – so the popular association in general newspapers and magazines – often perceived as *the* city of contemporary music (VAN HEUR, 2009).[4]

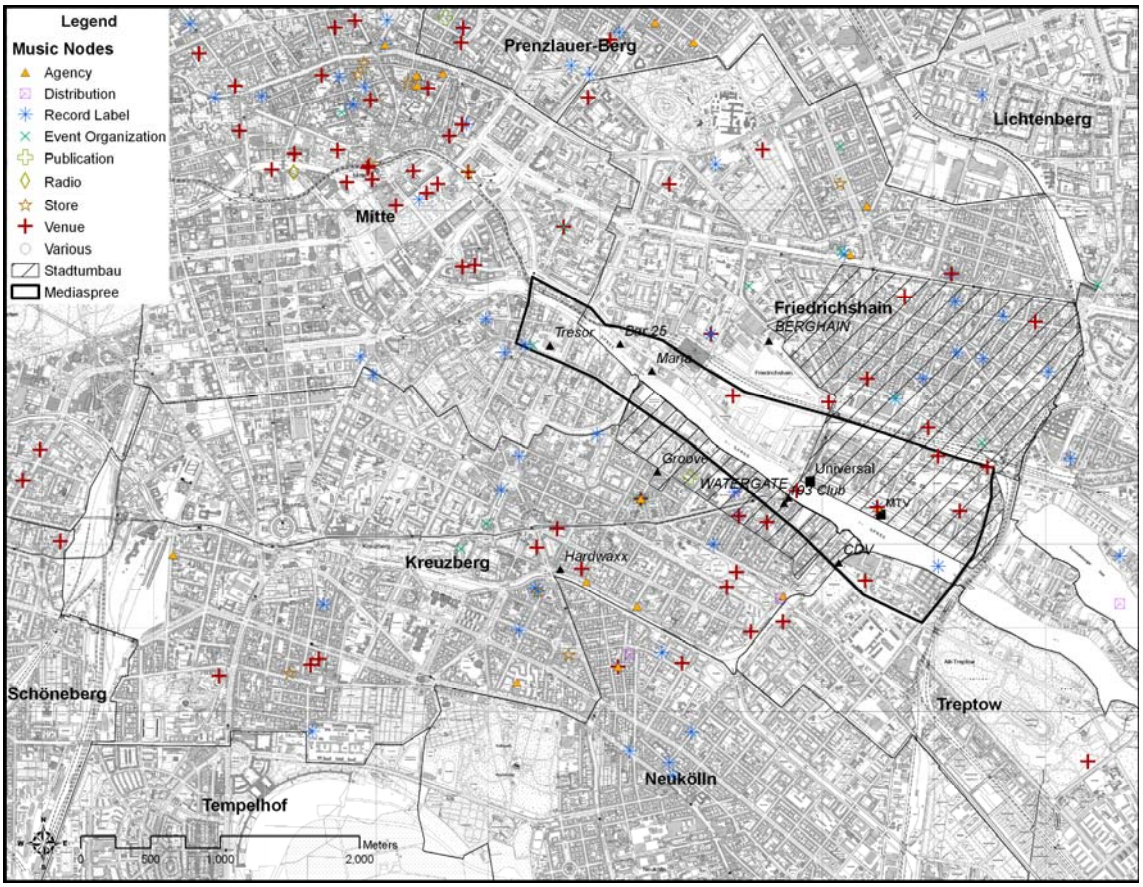
In 2002, the Universal concern moved its European headquarter from Hamburg into the area, exactly vìs-a-vìs the Watergate club, separated only by the river Spree. Two years later MTV Europe followed, choosing a riverbank location just a few hundred meters away. Both enterprises received public support running into the millions, but the culturally fertile environment represented an asset in terms of location attractiveness. These enterprises should have served as anchor users within an area which was chosen to become one of Berlin's largest investment projects with a particular focus on communication and media industries, the so-called "Mediaspree". The project, which was promoted in a public-private partnership by private investors, authorities and the local chamber of commerce, had been under discussion since the mid-1990s, but became concrete after 2002, when the Senate Department adopted the land-use plan in order to facilitate the renovation of old warehouses and development of empty properties to be used for offices, lofts, hotels and a new 17,000-seat multi-functional event arena completed in 2008. The designated area covers about 180 hectare along approx. 3.7 km of both riversides. The prestigious project had been intended to bring positive economic impulses to the area and to contribute to the revitalization of the surrounding south-eastern downtown areas, which were found to be in need of external stimuli. It has been embedded into areas that belong to two major German urban redevelopment programms “Stadtumbau Ost” and “Stadtumbau West”, which have been running since 2002 on the Friedrichshain side and 2005 on the Kreuzberg riverside. These programs involve considerable investment into public infrastructure as well as monetary incentives for private investment in housing stock renewal. Generally, the plans share many similarities with international

[3] Note that during the study period the airport Berlin-Schönefeld was one of the major hubs of the low-cost carrier “easyJet”.

[4] Van Heur provides a comparative analysis of contemporary music nodes in London and Berlin.

urban regeneration policies such as those stated in the UK Urban Task Force "*Towards an urban renaissance*" or the U.S. Department of Housing and Urban Development "*The state of the cities*" reports (DETR, 1999; HUD, 1999), putting issues like the provision of attractive public spaces, sophisticated architecture and urban design as well as the integration of arts and media on the planning agenda. Figure 1 shows the designated “Mediaspree” and the adjacent redevelopment areas as on the background of the local music geography.

Fig. 1 Neighborhood Situation



Notes: Figure has been created on the basis of the urban and environmental information system (SENATSVERWALTUNG FÜR STADTENTWICKLUNG BERLIN, 2006). Locations of music nodes are taken from VAN HEUR (2008)

The stated objective of authorities, to induce economic stimuli and increase the attractiveness of the location, accompanied by the creation of luxury housing, retailing, office space and mainstream entertainment, raised fears and anger among the resident population around the "Mediaspree" area. The typical quarrel flared up, running along the lines that one man's gentrification is another man's displacement (NEWMAN & WYLY, 2006). According to the stage-model, such con-

flicts typically occur at the third stage, when the first stage pioneers run out of affordable living space due to the immigration of higher income gentrifiers to whom the area becomes increasingly attractive after the initial neighborhood change (FRIEDRICHS, 2000). Along these lines, the key arguments of the opponents of the "Mediaspree" project focused on a threat of the urban equilibrium due to an increase in the cost of living space and subsequent displacement pressures. It was also argued that the urban renewal would leave no room for the unique cultural diversity within the area (LEE & HEBEL, 2007). To comprehend these fears, the background of the extremely low rate of owner occupancy within the study area has to be understood. In 2006, 139,200 from a total of 145,530 apartments were rented out, which equals to more than 95% (INVESTITIONSBANK BERLIN, 2007). This is a very high figure, even compared to most of the other districts in Berlin. Any increase on the demand side capitalizing into rent-levels therefore increases the revenues of landlords and the cost of living for almost all residents in the area.

Note that the “Mediaspree” area itself has been very sparsely developed and the project could therefore hardly displace population within that area. This is of course not the case for the adjacent revitalization areas. Moreover, changes within the development as well as the redevelopment areas were expected to affect the neighborhood beyond the fairly administrative boundaries. The "Mediaspree" project, therefore, served as a catalyst for perceived threats of neighborhood change and gentrification among the residents, which certainly where partially, but not entirely, attributable to the project itself. Driven by the activists groups "*AG Spreeufer*" (Spree riverside) and "*AG Spreepiratinnen*" (Spree pirates) a citizens' initiative was formed called "*Mediaspree Versenken*" (Sink the Mediaspree), which advocated for a reduction of building density and height and the preservation of public space along the riverbanks to be used as a subsidiary for recreational and cultural activities. Within a period of five month with numerous demonstrations and protest events, the initiators had collected enough signatures to enforce a public referendum against the "Mediaspree" plans. The referendum, which had no binding character, was held on July 13, 2008, under the label "*Spreeufeer für alle*!" (Spree riverside for all!). Residents were asked whether they would support

a ban for buildings exceeding 22m heights (the so called "Traufhöhe") and the creation of a public riparian strip of at least 50m width. The referendum won the approval of as much as 87% of the voters, with a turnout that was significantly above the necessary threshold (19.1% vs. 15%). A counterproposal of the district authority was in no position to win a majority. Briefly summarized, the public protests and the clear majority vote reflect that a large number of residents were in strong opposition to the project. The most important arguments were about the destabilization of the neighborhood (threat of displacement and loss of cultural diversity) while criticism on the economic viability of the projects, e.g. the superfluity of an additional multifunctional sports arena in Berlin, was existent, but not the focus of the resistance.

3 Empirical analyses

3.1 Precinct level voting analysis

Besides a huge body of theoretical literature, the complex phenomenon of gentrification has also been approached empirically from various disciplinary perspectives (e.g. BRUECKNER & ROSENTHAL, 2005; FREEMAN & BRACONI, 2002; KNOTTS & HASPEL, 2006; MCKINNISH, WALSH, & WHITE, 2008; VIGDOR, 2002, among many others). Quantitative techniques are frequently employed to explain objective measures of displacement in terms of characteristics of the renters. Qualitative analysis based on interviews instead may reveal which of the residents still living in the neighborhood face a perceived threat of displacement and neighborhood change. NEWMAN & WYLY (2006) provide an interesting comparison of results based on both techniques. Our empirical strategy, in some sense, represents a hybrid of both approaches. The empirical analysis of the precinct level voting outcome of the "Mediaspree" referendum, given that it was regarded as a major driving force of gentrification, facilitates inference on population groups that particularly opposed the ongoing and expected neighborhood change. The clear limitation of this approach is the impossibility to account for individual characteristics in the same detail as in qualitative interviews. The straightforward advantage, however, is the possibility of evaluating the opinions of ten-thousands (or more) of residents, which – under reasonable constraints – can hardly be

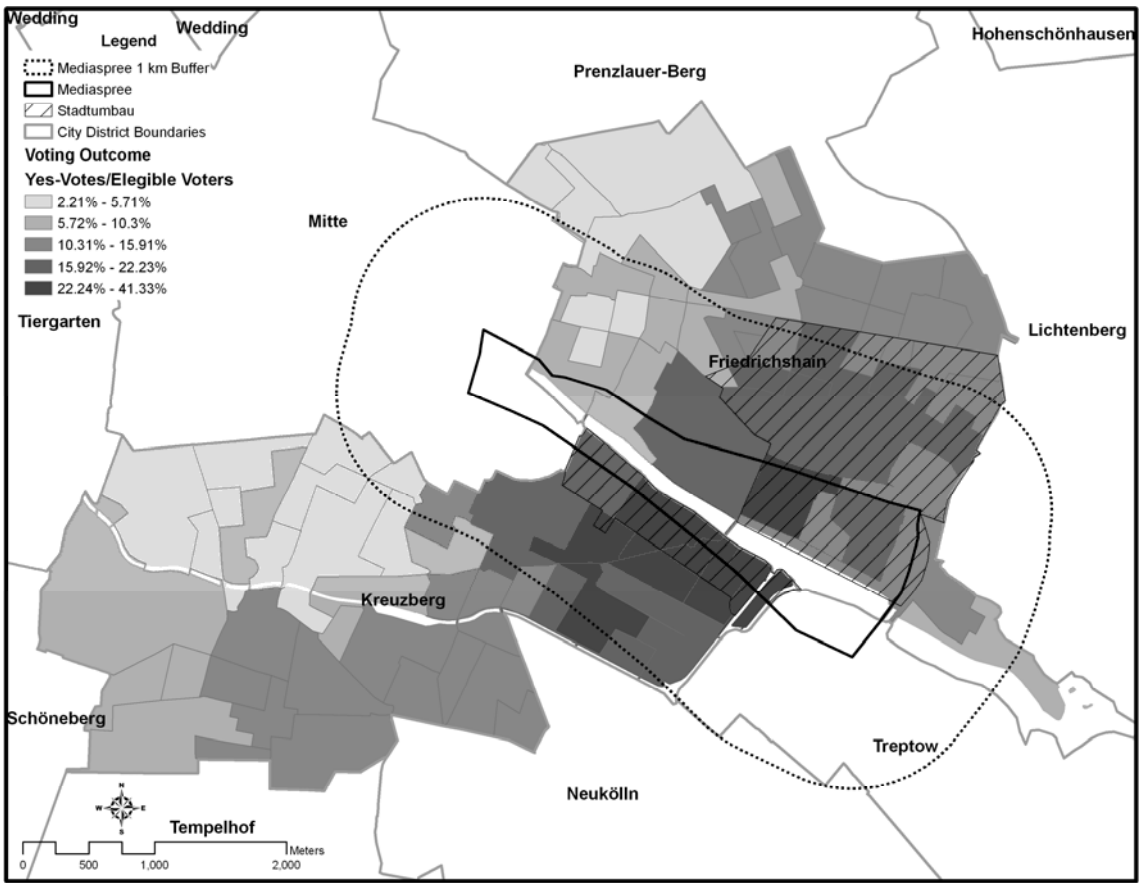
achieved in field studies. Our approach may therefore be regarded as complementary to the established qualitative techniques.

From the 34,326 valid votes in the referendum, 27,667 votes from the ballot boxes can be utilized in the empirical analyses. The remaining absentee votes, unfortunately, cannot be considered due to missing geo-references. Data are available at the precinct level at the district authority FRIEDRICHSHAIN-KREUZBERG (2008). At city level there are 1,201 voting precincts, 87 of which are within our study area comprising the city district Friedrichshain-Kreuzberg. We use a GIS framework to merge the voting outcome with 2008 data on socio-demographic characteristics available at the levels of 15,937 statistical blocks (population, age groups, proportion of male and non-German population), 191 zip codes (purchasing power) and 2,424 small voting precincts (outcome of the 2006 state elections). These data were obtained from the Statistical Office in Berlin, with the exception of data on purchasing power, which was derived originally from a prognosis of the consumer research society (Gesellschaft für Konsumforschung (GfK)). Standard area interpolation techniques (ARNTZ & WILKE, 2007; GOODCHILD & LAM, 1980) are used to aggregate all data to the level of the 87 precincts within our study area.

As our endogenous variable and proxy of neighborhood unrest we use the proportion of yes-votes from the number of eligible voters. This definition is favored against the alternative of using the proportion of yes-votes of total votes since this definition takes into account the large variation in the turnout and reflects the degree to which residents were driven by the incentive to vote against the "Mediaspree" project. Particularly due to the non-binding nature of the referendum, there were asymmetric incentives to engage in the public vote for opponents and proponents in the referendum, complicating inference on the basis on a comparison of yes- to no-votes alone. As shown in Figure A1 in the appendix the rejection rate varied as few as between 84-87% along all "buffer distances" to the treatment area. Figure A2 also shows that the spatial variance in opposition is almost entirely driven by turnout. Not surprisingly, unpublished robustness checks using turnout as endogenous variable yield almost exactly the same result throughout all stages of the empirical analysis. In the reminder of the article we

assume that larger opposition against the project within a precinct strictly increases the proportion of residents supporting the referendum and, ergo, the number of yes votes relative to the number of eligible voters. The spatial distribution of our primary indicator variable is depicted in Figure 2.

Fig. 2 Voting Pattern



Notes: This figure has been created on the basis of the urban and environmental information system (SENATSVERWALTUNG FÜR STADTENTWICKLUNG BERLIN, 2006). Classes are defined according to the JENKS (1977) algorithm.

The picture clearly indicates a high degree of variation in the mobilization of "Mediaspree" opponents, ranging from as few as 2% to more than 40% of the elegible voters. It is also evident that almost all of the precincts with a mobilization rate of more than 15% lie within a 1 km buffer area surounding the "Mediaspree" area, indicating a relatively localized opposition to the project. This is a fairly intuitive finding, given that the perceived threats associated with the "Mediaspree" project should be largest in the immediate proximity. Both the expected impact on affordability of living space as well as the disamenity effect

of the neighborhood change along the riversides are likely to diminish with distance.

We employ a strategy that is well-established in applied public choice (e.g. BRUNNER, SONSTELIE, & THAYER, 2001; COATES & HUMPHREYS, 2006; DEHRING, DEPKEN, & WARD, 2008; RUSHTON, 2005; SCHULZE & URSPRUNG, 2000) in order to reveal the precinct characteristics that impact significantly on the voting outcome and whether there is any proximity effect conditional on these characteristics. Following the "*ecological inference*" the results of a precinct level analysis may be interpreted as the individual effects for representative residents.[5] Some caution, however, is appropriate with this interpretation since an "*ecological inference*" may also lead to an "*ecological fallacy*", e.g. if distinct population groups exhibited different turnouts in the referendum. The following specification is used:

$$PctYES_i = \alpha + \sum_k \beta_k X_{ik} + \gamma_1 west_i + \gamma_2 revWest_i + \gamma_3 revEast_i + \gamma_4 distMS_i + \varepsilon_i \qquad (1)$$

where $PctYES_i$ is the percentage of yes-votes of eligible voters in precinct *i*, ε is the error term and the other Greek letters are coefficients to be estimated. The socio-demographic characteristics of precincts are represented by a set of variables X_k. An anticipated increase in the cost of living space should particularly affect those residents that face relatively tight budget constraints. From this, a potentially stronger opposition against the "Mediaspree" project might arise in precincts with a relatively low-income level, which we approximate using *purchasing power* per capita. Since the cultural establishments discussed above mainly address a relatively young adult audience, we add the proportion of *18-45 year-olds*, which potentially expect a larger (dis-)utility from a loss of these amenities compared to other population groups. Since the (expected) utility may also vary across other population groups, we add the proportion of *male* and *non-German* population. The latter variable may also pick up the effect of social and language barriers,

[5] Instead of individual data, the preferences of the inhabitants in terms of benefits can also be examined on the basis of aggregated or grouped population statistical data, e.g., at the constituency level. An extensive discussion of the underlying assumptions of ecological inference can be found in SHIVELY (1969), KING (1997), or KING, ROSEN & TANNER (2004).

which might lead to lower mobilization in precincts with a high proportion of foreigners. As an additional set of controls, we use political party affiliation in the 2006 state election, mainly for two reasons: First, the project was supported by the state government, which could impact on the attitudes of supporters of governing and opposing parties. Second, political party affiliation serves as a rough proxy for lifestyle group which is not entirely captured by standard socio-demographic attributes. As noted in the "death-of-class"-debate a one-dimensional view on society along an linear income-ray falls short in accounting for the full diversity of personal tastes, attitudes and values, as well as political orientation, and consumption preferences (VEAL, 1993). Lifestyles particularities may well determine the frequency and benefit from the local cultural amenities that are a tailboard for a relatively narrow audience. Last, we use the precinct level *turnout* in the 2006 federal election as a proxy for the general political interest, which may affect the likelihood of residents engaging in the subject referendum. We note, however, that the 2006 turnout within the study area was in line with the rest of Berlin (59.5% compared to 60.5%) and that we cannot reject that the mean turnout in the referendum did not vary between the 1 km buffer zone and the rest of our study area based on a t-test. The remaining variables in specification (1) are of a geographic nature, denoting whether a precinct lies on the Kreuzberg side of the river (*west*), within the area of the revitalization program "Stadtumbau West" (*revitalization west*) or "Stadtumbau Ost" (*revitalization east*) and the distance from the precincts' centroids to the respective riverbank alongside the "Mediaspree" areal (*distance to river*). These variables are introduced into the specification in order to test the hypothesis of no spatially uneven resistance, conditional on precinct characteristics.

Estimation results for specification (1) are presented in Table (1). In column (1) the hypothesis is tested that support for the referendum is spatially homogenous, unconditional on precinct characteristics. This hypothesis has to be rejected as suggested by Figure 1. Support is generally larger within Kreuzberg than Friedrichshain and within both revitalization areas compared to the rest of the district. Furthermore, support significantly diminishes with distance to the riverbanks. In column (2) the precinct characteristics discussed above are intro-

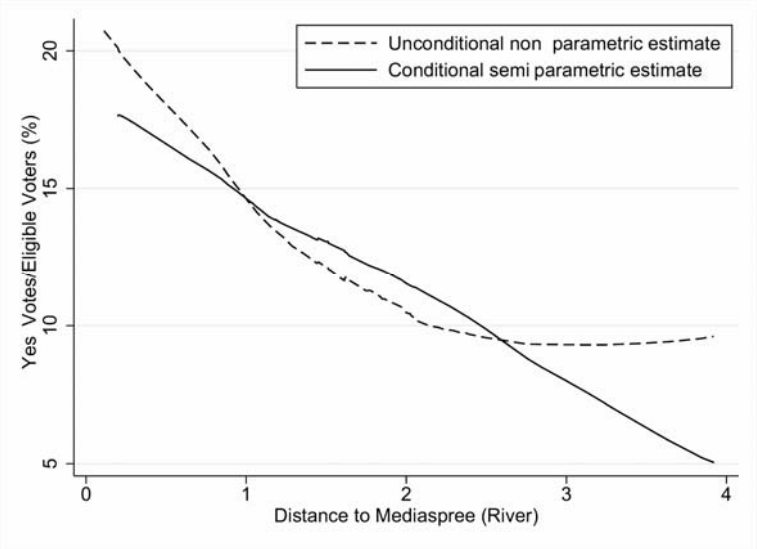
duced into the model in order to test the same hypothesis, conditional on socio-economic attributes. After stepwise deletion of insignificant variables the final specification (3) is obtained. Socio-demographic characteristics explain much of the differences between the average support in Friedrichshain and Kreuzberg as well as the revitalization areas and the rest of the study area, but not the significant impact of proximity to the riverbanks. Accordingly, the ratio of yes-votes at eligible voters decreases by about 3.5 percentage points for any 1 km increase in distance to the riverbank.

From the socio-demographic characteristics, a number of variables are found to have robust and significant effect. An increase in the proportion of relatively young adults by 1 percentage point yields a 0.31 percentage point increase in the rate of approval. A similar increase in the proportion of supporters of the left-hand side governing parties (*Gov* is formed by *SPD* and *Die Linke*) as well as of the major conservative opposition party (*CDU*) in the 2006 state elections induces a decrease in the rate of approval by about 0.25 and 0.57 percentage points.[6] This effect could be either attributable to voters feeling committed to the plans of the parties to which they are affiliated (all of the three parties supported the project) or to lifestyle specific attitudes and the tastes of supporters of these mainstream parties, which may have a relatively lower demand for alternative cultural goods. The turnout in the federal elections, in contrast, impacts positively on the support of the referendum. Precincts with a high proportion of politically active residents also exhibit a larger rate of mobilization and approval in the subject referendum. The increase in the coefficient of determination of about 0.5 in columns (2) and (3) compared to (1) indicates that these socio-demographic precinct characteristics account for a relatively large proportion in the variation in the voting outcome. From the socio-economic variables that do not exhibit a significant impact on spatial voting pattern *purchasing power* is the most notable as a significantly positive impact would have been expected if affordability was the major concern of the voters.

[6] Individually, the governing parties SPD (-0.24) and Die Linke (-0.26) exhibit almost exactly the same coefficient values.

A critical question regarding the specification of model (3) is whether the distance to the riverbanks should be assumed to impact linearly. Non-linear estimates of the impact of distance on the voting outcome are visualized in Figure 3 using non-parametric and semi-parametric regressions (LOKSHIN, 2006). While unconditional estimates indicate a marginal impact that diminishes with distance, the relationship conditional on model (3) control variables exhibit a fairly linear shape, suggesting that the specification employed in Table 1 is appropriate.

Fig. 3 Non-parametric Distance Effects



Notes: Gradients are estimated by use of locally weighted regressions. Conditional estimates are obtained employing the Lokshin (2006) technique.

Another important issue regarding the appropriate spatial specification of model (3) is the presence or absence of spatial dependency, which would cause inefficient or biased OLS estimates. Based on a contiguity weights matrix, however, LM-tests do not reject the hypothesis of no spatial autocorrelation.[7] If a spatial lag model is employed (4) in order to account for a potential dependency of the precinct outcome on neighbouring outcomes, which might result from cross-border interactions between voters, coefficient estimates remain almost unchanged

[7] The LM-test scores are: LM_{error} = 0.244; LM_{lag} = 0.240.

while the spatial lag coefficient (Rho) remains statistically insignificant.[8] Spatial dependency, hence, does not seem to give much cause of concern.

It is noteworthy that the official plans ensure public access to the riversides, which is even to be improved considerably at the Kreuzberg side of the river. It is therefore unlikely that we are observing an (expected) disutility effect related to the purely natural amenity "river Spree". There are, however, at least two competing hypotheses that can be developed on the basis of the arguments of the citizens' initiative and the results presented above: First, the perceived disutility of losing the cultural amenities along the riverbanks should diminish with distance. On the one hand the net-utility of those amenities will generally decrease with transport costs, leading to lower incentives to engage for their preservation at larger distances. Closely related, we may observe the effect of a TIEBOUT (1956) like sorting process with respect to the local cultural amenities according to residents' preferences and tastes. These unobserved residential characteristics may well account for the otherwise explainable localized support in the referendum. COATES & HUMPHREYS (2006) develop a similar argument as an explanation for the local support of professional sports facilities. WALDFOGEL (2008) provides empirical evidence for a local matching of local private goods and residents' taste. Second, the concerns of raising the cost of living space due to the project should be larger at close distances, given that the spillovers are likely to be localized. We will turn our attention to this point in the next sub-section.

[8] An alternative form of spatial dependency would result from spatial measurement error or omitted variables that are correlated across space. This form of spatial dependency can be dealt with a spatial error correction model. Methodological background to spatial lag and spatial error models are covered by ANSELIN (1988), among others.

Tab. 1 Determinants of Yes-votes/Eligible Voters

	(1) OLS	(2) OLS	(3) OLS	(4) SAR
West	4.924**	5.077	1.869	1.823
(dummy)	(1.861)	(4.347)	(1.883)	(1.845)
Revitalization West	7.196*	2.049	2.531	2.598
(dummy)	(3.153)	(2.335)	(1.980)	(2.021)
Revitalization Ost	6.575**	0.144	0.124	0.137
(dummy)	(1.307)	(1.209)	(1.124)	(1.109)
Distance to river	-3.052**	-3.719**	-3.498**	-3.371**
(km)	(1.074)	(0.928)	(0.694)	(0.923)
Purchasing power		0.0003		
(€/capita)		(0.001)		
18-45 year-olds		0.176*	0.131*	0.128*
(%)		(0.075)	(0.051)	(0.052)
Non-German		-0.095		
(%)		(0.095)		
Male		-0.075		
(%)		(0.180)		
CDU		-0.611**	-0.569**	-0.554**
(%)		(0.085)	(0.071)	(0.086)
Government Parties		-0.205*	-0.245**	-0.238**
(%)		(0.079)	(0.073)	(0.068)
Turnout		0.119	0.205*	0.210**
(%)		(0.108)	(0.080)	(0.075)
Constant	13.585**	27.541*	18.106*	17.013*
	(1.727)	(16.431)	(9.124)	(8.620)
Rho				0.005
				(0.014)
Observations	87	87	87	87
R-squared	0.38	0.85	0.85	0.85
Mean VIF	1.39	6.52	4.27	4.27
AIC	533.83	442.61	438.95	442.69

Notes: Endogenous variable is percentage of yes votes at eligible voters in all models. Robust standard errors in parentheses. ** p<0.01, * p<0.05.

3.2 Local Apartment Price Appreciation

Ambitious planning authorities aiming to revitalize downtown areas have an – at least – ambiguous if not different perspective on gentrification and area valuation than local renters. Besides a general concern about the social cost for the displaced, the gentrification process might be regarded positive or negative for the residents avoiding displacement. On the one hand residents may benefit from neighborhood improvements while, on the other hand, they suffer from the displacement of culture and community networks (ATKINSON, 2000; MARCUSE, 1986). Anyway, authorities that aim at improving neighborhood quality will have to acknowledge that an increase in the attractiveness of places leads to a raise in

the willingness to pay for living space, if not by the old inhabitants then by those who decide to move into the neighborhood. A demand side driven increase in the price of living space may, in this light, even serve as a benchmark for the success of revitalization attempts. The assessment of the "Mediaspree" development project and the two "Stadtumbau" redevelopment projects in these terms is complicated by the fact that the urban intervention did not come at one identifiable date. As noted above, most of the plans for the "Mediaspree" date back to the 1990s, but materialized only gradually due to the bad economic climate. While the development gained some pace after 2002, when the Senate Department adopted the land-use plan, effects may have well been anticipated by real estate markets before (MCMILLEN & MCDONALD, 2004). We therefore employ a flexible specification that compares appreciation rates the vicinity of the project area to the rest of our study area over a sufficiently long period. If the project had the potential to emanate positive externalities on the attractiveness of the area, its gradual evolution together with the decreasing uncertainty about the outcome would be mirrored in rising (relative) real estate prices.

As noted above, Berlin in general and the study area in particular are characterized by an extremely low owner occupancy rate. The effective cost of living space is therefore determined by the local rent level. Within this environment housing prices, however, are just a reflection of expected (discounted) revenues of investors, which depend on realizable rents. While rents due to rigidities and legal constraints adjust gradually, shocks to changes in demand should capitalize immediately into house prices. We will investigate the evolution of house prices within the study area based on all apartment transactions that occurred from beginning of 1997 to June 2008, the month before the referendum was hold. Our data set, obtained from the local COMMITTEE OF VALUATION EXPERTS (2008), contains many of the usual features (e.g., age, size, number of rooms, and balcony) and, in addition, some additional contract details (occupancy, tax privileges, rent guarantees). After losing a handfull of observations due to missing values we obtained a final sample of 9,980 transactions. Data are merged with the precinct level framework within a GIS environment that also facilitates the calculation of environmental variables.

We adopt a hedonic approach using the well-established log-linear specification in order to correct for apartment as well as location characteristics. This approach is in line with a large body of literature that shares the idea of treating real estate commodities as bundles of attributes whose implicit prices can be estimated using multivariate regression (ROSEN, 1974). Using log of prices per square meter (*Psqm*) as the endogenous variable our regression specification basically takes the following form:

$$\log(Psqmj_{jt}) = \sum_m \vartheta_m Y_{jm} + \delta\ Z_j + \sum_{1998}^{2008} \left(\delta_u Z_j \times \phi_t\right) + \phi_t + \varphi_i + \omega_j \qquad (2)$$

where Y_m are the structural and locational control variables listed in Table A1 in the appendix and υ_m the respective estimated marginal price effects. Parameters Φ_t and φ_j represent full sets of time and precinct effects and control for unobserved location characteristics and macroeconomic shocks that affect the entire sturdy area, while ω_j is an error term. *Z* describes the location of a property transaction with respect to the (re)development areas of interest. In the first step *Z* is a dummy variable denoting transactions that occurred within the 1 km buffer zone depicted in Figure 2. Coefficients δ_u give an index of relative prices within that area relative to the initial year 1997. They give difference-in-difference estimates in the sense that they differentiate over space and time. Column (1) in Table A1 in the appendix shows estimates using a more or less standard set of structural attributes supplemented by location controls such as the distance to the central business district (*CBD*), the nearest *school*, *park*, *water* body and metro *rail station*.[9] These variables account for transport costs to these features that are traded against the price of living space. Recent research indicates that the historic quality of a neighborhood's building stock may also represent a valuable location amenity (e.g. AHLFELDT & MAENNIG, in press; COULSON & LAHR, 2005), which we address by the distance to the nearest designated *landmark*. With only a few exceptions, the coefficient estimates are in line with conventional expectations and recent evidence for the Berlin housing market (AHLFELDT, in press). Notable is

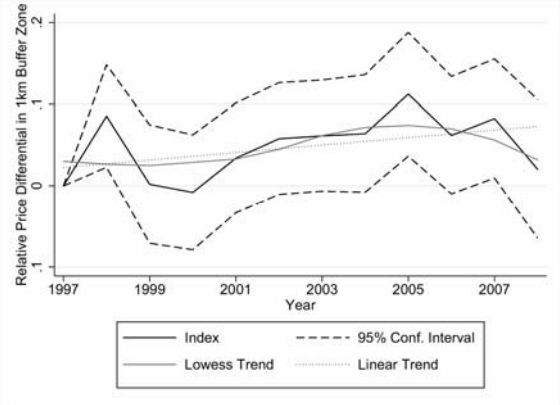
[9] The CBD is defined as the crossroads between the boulevards Friedrichstrasse and Leipziger Strasse.

the positive coefficient on *distance to CBD*, probably revealing that the amenity effect of peripheral recreational amenities dominates the centripetal forces, e.g. employment accessibility.

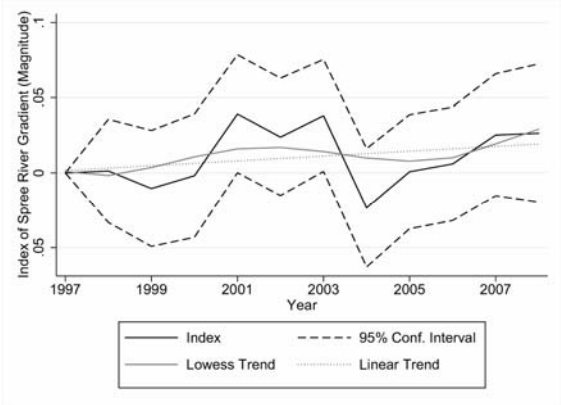
Estimation results for δ_u are presented in Figure 4a, together with the respective 95% confidence interval and linear and non-linear trend line. If any, there is only a weakly positive long-term trend in prices within the 1 km buffer zone relative to the rest of the district. While there is a steady increase until 2005, a pronounced downward adjustment occurs afterwards. This depreciating effect might be related to the construction of the o2 arena, a 17,000 seat multifunctional sports area, as professional sports facilities may induce perceived (expected) proximity cost related to noise and congestion (AHLFELDT, MAENNIG, & SCHOLZ, in press). Also the year 2005 is the only year where the relative price differential can be rejected to be zero on the basis of the 95% confidence interval. Figure 4b) provides analogous estimates with *Z* representing the distance to the "Mediaspree" riverbanks as used in Table 1. Estimates for control variable are provided in Table A1, (2). Note that Figure 4b shows the magnitude of the coefficient so that positive values imply an increase in the marginal price effect of 1 km distance. Again, there is only, if any, a weakly positive evolution of land prices with respect to the treatment area. A positive trend until 2003 is offset by pronounced adjustment afterwards, followed again by a positive development after 2004. Moreover, the gradient cannot be statistically rejected to take the same value as in the initial period in all years.

Fig. 4 Indices of Relative Apartment Prices

a) 1 km buffer zone



b) Distance Gradient

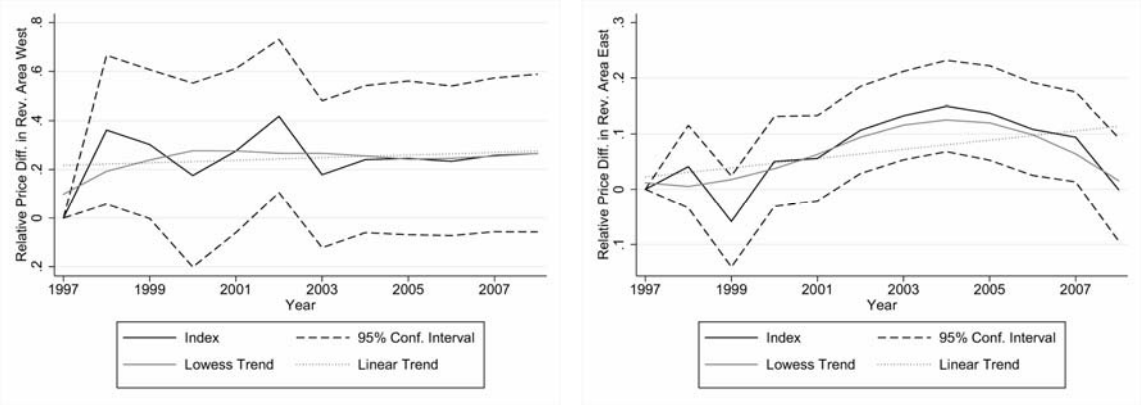


Notes: Figures generated on the basis equation (2). Estimation results for control variables are presented in Table A1, (1) and (2) in the appendix. Lowess trend is a non-linear fit using locally weighted regressions.

As noted, it is difficult to identify a clear intervention date for the "Mediaspree" development project itself. For the adjacent urban redevelopment, however, such intervention dates can easily be identified. If the redevelopment programmes had led to an increased in value of the neighbourhood and corresponding increase in demand we would expect a positive reaction in relative prices after 2002 in the case of the eastern Friedrichshain riverside and a respective adjustment within the western Kreuzberg side after 2005. Again, we employ an equation 2 type specification where *Z* now represents a vector of two dummy variables which each denote one of the two redevelopment areas. Results for control variables are presented in column (3) of Table A1 while indices of relative land prices are shown in Figure 5. Figure 5a does not point to any significant relative price trend within the western redevelopment area at all. Either investments were not large enough to trigger significant price effects or the effects are not visible, yet. In contrast, Figure 5b reveals significantly positive price differentials within the eastern redevelopment area between 2002 and 2007, with the first significant year being the implementation year of the redevelopment program. The positive trend, however, seems to start before 2002 and does not hold longer than until 2005. In the subsequent period prior to the referendum relative prices declined until the previous increase is almost offset.

Fig. 5 Indices of Relative Apartment Prices

a) Kreuzberg (Stadtumbau West) b) Friedrichshain (Stadtumbau Ost)



Notes: Figures generated on the basis equation (2). Estimation results for control variables are presented in Table A1, (3). Lowess trend is a non-linear fit using locally weighted regressions.

In our last approach to the evaluation of apartment prices within the study areas we turn our attention to individual trends at the precinct level on the basis of the following specification:

$$\log(Psqmj_{jt}) = \sum_m \vartheta_m Y_{jm} + \sum_i \lambda_i TREND_t \times \varphi_i + \varphi_i + \nu_j \qquad (3)$$

where φ_i again is a set of precinct level dummies. These are also interacted with a quarterly time *TREND*$_t$, which is rescaled in a way that λ_i coefficients give the average yearly appreciation in apartment prices at precinct *i*. As described in the next section, the idea is to investigate whether precinct level appreciation significantly explains the voting pattern in the referendum. Since a priori it is not clear which would be the appropriate period to be considered, we generated a set of trend estimates, each one starting at a different year from 1997-2007 and decided for a starting date in 2000 based on the Akaike information criterion obtained in equation (4). Baseline estimation results corresponding to equation (3) are presented in column (4) of Table A1. The estimated trend effects, which are almost all statistically significant at conventional levels, are visualized in Figure (6). From the picture, however, no comprehensive story about a spatial pattern is immediately apparent. Note that we lose 9 precincts due to insufficient transactions to establish an individual trend estimate.

From the results presented in this section we cannot affirm that property owners acknowledge or expect any significant impact on the location desirability from the "Mediaspree" project. While this may be a disappointing result for authorities fostering an increase in neighborhood quality, it is encouraging for the resident population, given that displacement pressures seem to be – at least – not amplified by the plans.

Fig. 6 Precinct Level Appreciation Rates

Notes: Figure has been created on the basis of the urban and environmental information system (SENATSVERWALTUNG FÜR STADTENTWICKLUNG BERLIN, 2006). Classes are defined according to the JENKS (1977) algorithm.

3.3 Voting Pattern, Appreciation and Amenities

As noted above, activists engaging in the resistance against the "Mediaspree" project were worried about increasing living costs for living space in the area on the one hand, and about the loss of the vivid public spaces along the Spree riverbank as well a change in neighborhood character on the other. These concerns stand exemplarily for residents in gentrifying neighborhoods fearing for their own displacement or the displacement of culture and community networks (ATKINSON,

2000; MARCUSE, 1986). As shown in the section above, there is hardly compelling evidence that the major urban development and redevelopment projects in the area have had a localized impact on apartment prices. Nevertheless, there is considerable heterogeneity in appreciation rates across precincts as indicated by Figure 6. These are a good predictor for the relative evolution of rent-levels since buyers anticipate future revenues in their bids. If residents in precincts with relatively higher appreciation rates perceive higher displacement pressures, we would expect them to be more forceful in opposing a project that both proponents (authorities) as well as opponents (citizens' initiative) have argued would increase demand for living space in the neighborhood.

The economic rationale is straightforward. In principle, we may assume that the established residents had chosen an optimum neighborhood trading the neighborhood quality against the cost for living space, conditional on their budget constraints. In this situation an increase in neighborhood quality (due to an exogenous urban development project) will attract gentrifying households who are prepared to pay higher marginal prices for neighborhood quality, raising the local rent level. The old inhabitants are thereby driven out of their consumption optima. The positive utility effect of an increase in neighborhood quality is overcompensated by reduced non-housing consumption. Residents who decide to stay and to engage with increasing rents are forced to consume too much neighborhood quality and too few non-housing goods compared to the optimum allocation. The resulting disutility comes in addition to the disutility from an adjustment of local services and cultural amenities in favor of the gentrifiers. Given that there is a minimum consumption of non-housing goods, displacement pressures – at least theoretically – can eventually become high enough to leave resident with no choice but to exit their neighborhoods. This scenario corresponds to what MARCUSE (1986) calls "exclusionary" displacement. It is worth noting that this rationale stands in contrast to the implications of the home-voter hypothesis, which is supported by empirical research for the U.S. (BRUNNER & SONSTELIE, 2003; BRUNNER, SONSTELIE, & THAYER, 2001; DEHRING, DEPKEN, & WARD, 2008; HILBER & MAYER, 2009). Accordingly, homeowners will vote in favor of public

goods or any kind of initiatives that they expect will raise the value of their immobile assets – their real estate properties (FISCHEL, 2001).

If we assume residents to perceive the experienced local relative appreciation as a (noisy) signal for the impact of the ongoing "Mediaspree" and "Stadtumbau Ost/ West" (re)development projects on local demand for living space in the broad area of Friedrichshain-Kreuzberg, inference on the validity of the home-voter hypothesis within rental environments is possible on the basis of the conditional relationship between support for the subject referendum and local appreciation rates. Therefore, we introduce the estimated local appreciation rates $\hat{\lambda}_i$ into specification (1).

$$PctYES_i = \alpha + \sum_k \beta_k X_{ik} + \gamma_1 west_i + \gamma_2 revWest_i + \gamma_3 revEast_i + \gamma_4 distMS_i + \eta\hat{\lambda}_i + \tau DuM_i + \varepsilon_i \quad (4)$$

Since the introduced variable is a generated regressor, similarly to DEHRING, DEPKEN & WARD (2008) we bootstrap the standard errors in 500 replications in order to avoid potential bias in OLS standard errors (MURPHY & TOPEL, 2002). As noted above, appreciation rates could not be estimated for a handful of precincts. In these cases, appreciation rates are set to zero and the respective observations denoted by a dummy (*DuM*).

Results corresponding to this specification are presented in Table 3, (1). The results show that, as expected, the home-voter hypothesis in its standard form does not apply to the subject market with marginal owner occupancy. Besides the clear opposition against the potentially price-appreciating project at district level – at least by those who engaged in the referendum – we find a significantly positive relationship between *appreciation* and opposition across precincts, although it is relatively moderate. Accordingly, an increase in the average appreciation during 2000-2008 leads to a 0.12 percentage point increase in the proportion of voters supporting the referendum, corresponding to a about 1% increase relative to the rate of approval at district level (13.1%). Potentially, voters in the proximity of the "Mediaspree" riverbanks associate more strongly a perceived appreciation with the project within their neighborhood. Since in this case we would expect a relatively larger marginal impact on the voting outcome we allow the marginal im-

pact to vary with distance to the "Mediaspree" by the introduction of an interactive term *DistMS* x *Appreciation* in column (2). While the coefficient shows the expected sign, standard errors by far exceed a threshold that would be required to satisfy conventional significance criteria. Note that spatial dependency, again, appears not to represent a major concern. Based on a contiguous weights matrix LM-test cannot reject the hypothesis of no spatial dependency and application of a spatial lag model (3) leaves the estimates almost unchanged, while the lag coefficient itself is not statistically significant.[10]

While we find evidence for larger opposition to the project within precincts with relatively higher appreciation, this effect can hardly account for the localized support in the referendum, which significantly increases with proximity to the "Mediaspree" riverbanks. In absolute terms, appreciation rates within the "Mediaspree" development area and the adjoining redevelopment areas were even negative during our observation period. These results are in line with the absence of significant income effects in the voting pattern (see 3.1), which also suggest that affordability concerns were not the major driving force of opposition.

[10] The LM-test scores are: $LM_{error} = 0.027$; $LM_{lag} = 0.152$.

Tab. 2 Impact of Apartment Appreciation on Yes-votes/Eligible Voters

	(1) OLS	(2) OLS	(3) SAR
West (dummy)	1.442 (1.653)	1.288 (1.736)	1.448 (1.590)
Revitalization West (dummy)	2.366 (1.852)	2.516 (1.800)	2.301 (2.002)
Revitalization Ost (dummy)	-0.224 (1.175)	-0.225 (1.227)	-0.261 (1.230)
Distance to river (km)	-3.657** (0.667)	-3.614** (0.662)	-3.774** (1.034)
18-45 year-olds (%)	0.134** (0.049)	0.129* (0.053)	0.137** (0.052)
CDU (%)	-0.531** (0.071)	-0.530** (0.080)	-0.541** (0.080)
Government Parties (%)	-0.274** (0.066)	-0.280** (0.074)	-0.282** (0.065)
Turnout (%)	0.169* (0.078)	0.172* (0.081)	0.163* (0.070)
Appreciation (%)	0.123* (0.057)	0.183 (0.183)	0.131+ (0.070)
DuM	-0.871 (1.226)	-0.858 (1.262)	-0.921 (1.139)
Appreciation (%) x Distance to river (km)		-0.035 (0.093)	
Constant	21.200* (8.518)	21.658* (9.343)	22.325** (8.261)
Rho			-0.004 (0.016)
Observations	87	87	87
R-squared	0.86	0.86	0.86
Mean VIF	3.89	2.73	3.89
AIC	437.10	438.82	440.93

Notes: Endogenous variable is percentage of yes-votes at eligible voters in all models. Standard errors (in parentheses) are bootstrapped in 500 replication in models (1) and (2). ** p<0.01, * p<0.05.

Note that the "Mediaspree" riverbank proximity effect is also robust to a range of possible negative externalities we accounted for in separate robustness checks. For instance, the "Mediaspee" project encompasses a new bridge crossing the river that possibly would generate additional traffic as well as related noise and pollution. As already discussed, a 17,000 seat multifunctional sports arena had been developed within the "Mediaspree" area. As shown by AHLFELDT &

MAENNIG (2009) for the case of sports arenas in Berlin-Prenzlauer Berg, which locate only a few kilometers northwards of the study area, sports arenas may exhibit both negative externalities, in particular at game days, and have an appreciating effect on the neighborhood. Even the Allianz-Arena in Munich, an architectural landmark stadium designed by Herzog & De Meuron, induced strong localized opposition in a public referendum (AHLFELDT, MAENNIG, & SCHOLZ, in press). Both the scheduled bridge as well as the sports arena locate within the core area where construction works will take place and where the related disutility should be expected to be highest. Last, the new development might have been expected to increase overall traffic streams within the study area, which would reflect in particular opposition along the major traffic arteries. Results for the robustness checks are presented in Table A2 in the appendix. In none of the specifications are the generated spatial variables significant, nor is the distance to the riverbank effect considerably reduced.[11]

This leads us to stick to the first of the hypotheses developed at the end of section 3.1. The localized effects are more likely to be caused by an anticipated disutility associated with the loss of cultural amenities and neighborhood charm, rather than by perceived displacement pressures. The disutility decreases with distance as residents' net-consumption benefits decline due to increasing transport costs. In addition, a TIEBOUT (1956) type matching of private cultural goods and unobserved residential preferences may explain the degree of localized resistance. In order to provide a formal test of this hypothesis, we in the final step of the empirical analysis make use of 360 music nodes in Berlin identified by VAN HEUR (2008), which we geogreference based on the provided address data. These nodes encompass a variety of groups, e.g. music venues, record labels, stores, etc., which are displayed for our study area in Figure 1. Assuming that the distribution of music nodes serves as a proxy for the particular neighborhood charm that activists are concerned with, we expect an increased opposition in areas with a higher density of cultural activity and the marginal effect of proximity to music nodes to

[11] The only exception is distance to main roads in column (3). The positive sign, however, is not in line with an increased opposition in proximity to transport arteries. Furthermore, no significant effects are found if the treatment effect is allowed to vary with distance to the riverbank (4).

diminish with distance to the "Mediaspree". We make use of two indicator variables to capture the music geography, a) the number of music nodes within a walking distance of 1.5 km and b) a music potentiality (*MP*) measure that aggregates music nodes, weighted by distance (*DISTMN*) in km.

$$MN_i = \sum_n \exp(-\tau \times DISTMN_n) \quad (5)$$

where τ is a decay parameter determining the weight with which node *n* enters the potentiality. Similar to AHLFELDT & MAENNIG (in press), we set the decay parameter to a value of 2, which implies an implicit spatial weight function that flats out after approx. 2 km in order to reflect walking speed. Results for extended Table 1, column (3) type specifications are presented in Table 3. Only the variables of primary interest are shown to save space since all other coefficients remain almost unchanged. Results relatively clearly confirm our expectations. Opposition increases with the density of cultural activity (1-4) while the marginal effect diminishes with distance to the "Mediaspree" area as reflected by the negative coefficients on the interactive terms in (3) and (4). Furthermore, the coefficient on the distance to the river finally is rendered insignificant in (3) and (4) and even very close to zero in (4), indicating that the spatial heterogeneity in the voting outcome has been accounted for. Notably, the potentiality variable works slightly better that the count veritable (and a range of similar variables based on different distance thresholds that were tested), confirming the suitability of potentiality variables to capture complementarities in amenity affects as suggested by AHLFELDT & MAENNIG (in press). After all, our results provide strong evidence for the perceived value of (private) cultural amenities, which is receiving increasing attention in the literature (CLARK & KAHN, 1988; HICKS & QUEEN, 2007; NOONAN, 2003; RUSHTON, 2005; SCHULZE & URSPRUNG, 2000; SHEPPARD, OEHLER, & BENJAMIN, undated).

Tab. 3 Voting Pattern and Music Nodes

	(1)	(2)	(3)	(4)
Distance to	-1.947+	-1.729+	-0.67	0.104
riverbank (km)	(1.139)	(0.904)	(0.790)	(0.758)
Music Nodes	0.095*	0.497**	0.166**	0.931**
	(0.038)	(0.153)	(0.05)	(0.262)
Music Nodes x			-0.05	-0.294+
Distance to riverbank			(0.034)	(0.159)
Music Nodes	Count	Potentiality	Count	Potentiality
Observations	87	87	87	87
R-squared	0.86	0.86	0.87	0.88
Mean VIF	5.12	5.17	5.58	5.77
AIC	435.606	433.285	432.162	425.140

Notes: Endogenous variable is percentage of yes-votes at eligible voters in all models. Music Nodes is number of music nodes within 1.5 km in (1) and (3) and music node potentiality as defined in equation (5) in (2) and (4). Robust standard errors are in parentheses. ** p<0.01, * p<0.05, + p<0.1.

4 Conclusion

In this article we investigate the public referendum in opposition to the "Mediaspree", a major urban development project in Berlin Friedrichshain-Kreuzberg, against the background of the local evolution of housing prices. The referendum was enforced by a movement of neighborhood resistance to perceived pressures of displacement and neighborhood change, including an anticipated threat to the vivid local cultural scene. The project served as a catalyst for fears and anger with regard to a broader process of neighborhood renewal, encompassing two major urban redevelopment programs "Stadtumbau West" and "Stadtumbau Ost" that operate adjacent to the "Mediaspree" area. The resulting conflicts stand exemplary for (re)developement strategies brought forth by ambitious authorities, which potentially accelerate gentrification at the cost of displacing the resident population and culture. We add to the literature in a number of respects. First, we provide evidence for a localized resistance to a (re)development strategy, which was associated with perceived gentrification, on the basis of the stated preferences of tens of thousands of voters. We find that the opposition was higher in precincts with a large proportion of young adults and residents with a larger interest in policy, but a lower affiliation to mainstream parties. Second, we show that there is no compelling evidence for a localized increase in demand for living space in prox-

imity to the renewal area, which should be mirrored in apartment prices. This finding neither confirms a particular success of authorities' revitalization plans, nor the stated major concerns of neighborhood activists. Eventually, from an analysis of the impact of precinct level appreciation rates on the voting pattern, our key-findings emerge.

Precincts with a relatively higher appreciation exhibited relatively more opponents engaging in the referendum, conditional on socio-demographic characteristics. This is indicative for a special case of the home-voter hypothesis applying to rental markets where residents oppose an increase in demand for living space. This effect, however, may hardly account for the localized resistance expressed in the referendum, which increases with proximity to the treatment area. In contrast proxy variables for the particular "neighborhood charm" capturing the local music geography exhibit a significant impact on localized opposition rates and explain the spatial heterogeneity in the voting outcome within the study area.

We conclude that localized opposition is more likely to be caused by an anticipated disutility associated with the loss of a neighborhood charm, constituted by specific cultural amenities and related to (unobserved) voter preferences, than by perceived displacement pressures. This finding is supported by the absence of significant income effects which we would expect if affordability of living space was a major concern. We interpret these results as evidence for the perceived value of cultural amenities and "intangible" neighborhood characteristics. Apparently, the perceived threat of neighborhood change and the displacement of local culture can be as relevant for residents' concerns and resistance as the threat of own displacement, at least in the case of a very specific endowment with cultural goods for which few substitutes are available.

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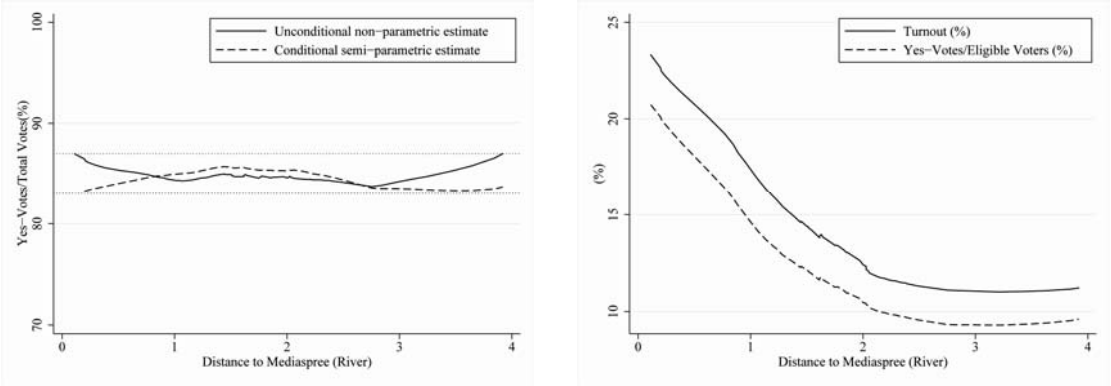
Appendix

Fig. A1 Turnover and Share of Yes-votes at Eligible Voters



Notes: Unconditional gradients are estimated by the use of locally weighted regressions. Semi-parametric estimates use the Lokshin (2006) technique and are conditional on the full set of control variables used in Table (1).

Tab. A1 Relative Trends in Apartment Prices (Full Results)

	(1)	(2)	(3)	(4)
Buildings' Stories	-0.020	-0.018	-0.019	-0.025*
	(0.012)	(0.012)	(0.013)	(0.013)
Elevator	0.118**	0.121**	0.114**	0.093**
	(0.023)	(0.022)	(0.022)	(0.024)
Below Street Level	0.051	0.047	0.059	0.007
	(0.049)	(0.049)	(0.049)	(0.053)
Street Level	-0.024	-0.023	-0.023	-0.016
	(0.020)	(0.019)	(0.020)	(0.022)
Story	0.014**	0.015**	0.014**	0.012**
	(0.004)	(0.004)	(0.004)	(0.004)
Size (m²)	0.002**	0.002**	0.002*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Size (m²) squared	0	0	0	0
	0	0	0	0
Number of Living	0.011*	-0.011*	-0.011*	0.010*
Rooms	(0.006)	(0.006)	(0.006)	(0.006)
Vestibule	0.009	0.008	0.006	0.039*
	(0.025)	(0.025)	(0.026)	(0.021)
Attic Store Room	-0.005	-0.001	-0.006	(0.012)
	(0.015)	(0.015)	(0.015)	(0.018)
Balcony	0.077**	0.076**	0.075**	0.086**
	(0.016)	(0.016)	(0.017)	(0.014)
Artist Studio	0.088*	0.099*	0.104*	0.192*
	(0.049)	(0.044)	(0.050)	(0.074)
Hobby Room	0.023	0.029	0.015	-0.017
	(0.183)	(0.175)	(0.181)	(0.240)
Basement Room	-0.050*	-0.056**	-0.051*	-0.052*
	(0.021)	(0.021)	(0.022)	(0.023)
Attic Storage	0.076*	0.078*	0.071*	0.029
Room	(0.037)	(0.037)	(0.039)	(0.045)
Garage	0.194**	0.196**	0.188**	0.171**
	(0.050)	(0.045)	(0.057)	(0.049)
Parking Lot	0.066	0.070	0.069	0.064
	(0.063)	(0.064)	(0.061)	(0.067)
Easement at Plot	0.048	0.052	0.040	0.058
	(0.071)	(0.072)	(0.068)	(0.058)
Age	-0.003*	-0.003*	-0.002*	-0.005**
	(0.001)	(0.001)	(0.001)	(0.001)
Age squared	0	0	0	0.000*
	0	0	0	0
Apartment	-0.459**	-0.465**	-0.468**	-0.467**
In Bad Condition	(0.069)	(0.069)	(0.070)	(0.067)

Tab. A1 Relative Trends in Apartment Prices (continued)

	(1)	(2)	(3)	(4)
Apartment is	0.283**	0.282**	0.277**	0.233**
Occupied by Renter	(0.025)	(0.024)	(0.025)	(0.026)
Apartment	0.199**	0.198**	0.197**	0.133**
is Leased	(0.031)	(0.031)	(0.032)	(0.031)
Social Housing	-0.217**	-0.203**	-0.229**	-0.239**
	(0.069)	(0.069)	(0.071)	(0.077)
Tax Privileged	-0.104	-0.071	-0.087	-0.075
Housing	(0.078)	(0.077)	(0.075)	(0.099)
Authorities	0.055*	0.045*	0.056*	0.066**
nominate Tenants	(0.028)	(0.024)	(0.026)	(0.021)
Rent Guarantee	0.131**	0.130**	0.137**	0.108**
	(0.021)	(0.023)	(0.024)	(0.020)
Share at	-0.001	-0.001	-0.001	-0.002
Joint Property	(0.003)	(0.003)	(0.003)	(0.003)
Distance to CBD	0.306*	0.107	0.368**	0.277
	(0.137)	(0.195)	(0.137)	(0.187)
Distance to	-0.045	-0.065	-0.019	0.025
Rail Station	(0.110)	(0.108)	(0.116)	(0.125)
Distance to	-0.055	-0.107	-0.098	-0.038
Park	(0.144)	(0.141)	(0.148)	(0.211)
Distance to	-0.305**	-0.347**	-0.294**	-0.295*
Water	(0.094)	(0.090)	(0.093)	(0.122)
Distance to	-0.191*	-0.043	-0.260*	-0.182
School	(0.114)	(0.165)	(0.111)	(0.157)
Distance to	-0.083	-0.117	-0.131	-0.142
Historic Landmark	(0.248)	(0.238)	(0.231)	(0.274)
Constant	7.112***	6.982***	6.728***	8.261***
	(0.051)	(0.113)	(0.266)	(0.214)
Treatment Effects	1 km buffer	Distance	Revitalization West & East	
Location Effects	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	yes	No
Trend Effects	No	No	No	Yes
Period	1997-2008	1997-2008	1997-2008	2000-2008
Observations	9980	9980	9980	7469
R-squared	0.46	0.46	0.46	0.49

Notes: Endogenous variable is log of apartment prices per square meter living area in all models. Robust standard errors (in parentheses) are clustered at precinct level. ** p<0.01, * p<0.05.

Tab. A2 Robustness Checks

	(1)	(2)	(3)	(4)
Distance to river (km)	-3.242 (1.987)	-4.213* (1.663)	-3.542** (0.702)	-3.528** (0.850)
Distance to new bridge (km)	-0.267 (1.429)			
Distance to O2 Arena (km)		0.849 (1.293)		
Distance to main road (km)			0.006* (0.002)	0.006 (0.005)
Distance to river x Distance to main road				0 (0.003)
Observations	87	87	87	87
R-squared	0.85	0.85	0.85	0.86

Notes: Endogenous variable is percentage of yes-votes at eligible voters in all models. Baseline model is in Table 1, (3). Only parameters of interested are displayed. Robust standard errors are in parentheses. Mean VIF in all models are <= 6. ** p<0.01, * p<0.05.

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