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LIFESTYLES AND PREFERENCES FOR (PUBLIC) GOODS: PROFESSIONAL FOOTBALL IN MUNICH

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Lifestyles and Preferences for (Public) Goods: Professional Football in Munich*

Abstract: This paper investigates the 2001 referendum on the Allianz-Arena, a professional soccer stadium in Munich, Germany, with respect to lifestyle-specific voter preferences. Using political party affiliation and milieu probabilities as proxy variables, we find that lifestyle-specific preferences, values and attitudes more significantly contribute to the explanation of voting outcome compared to traditional strata-orientated indicators of economic wealth. Thus, lifestyle, preferences, tastes and attitudes are not proportionally related to income. Results are robust to stadium proximity effects and spatial dependency.

Keywords:Lifestyle, Milieu, Referendum, Stadium, Munich
JEL classification:D72, H40, P36, R58
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1 Introduction

The increasing level of individualisation in modern societies in recent decades makes it difficult to describe individuals' behaviour by simple economic indicators such as income. The "death-of-class" debate noted that a one-dimensional view of society along income falls short of accounting for the full diversity of personal tastes, attitudes and values, as well as political orientation and consumption preferences. Therefore, new concepts such as lifestyle have been developed to classify individuals on a broader basis of values, attitudes or leisure patterns (VEAL, 1993). However, in most economic analyses, residents' heterogeneity is still addressed by the use of relatively "simplistic" economic indicators such as income per capita and poverty indicators like the rate of unemployment. In this article, we empirically analyze whether the use of indicators capturing more social diversity contributes to the explanation of consumer preferences. We investi-

* The generous provision of data by the Munich district administration department is gratefully acknowledged. Scholars and research assistants who contributed to this work will be acknowledged in the final version of the manuscript.

gate a good whose associated consumption benefits are expected to vary across lifestyle groups: Professional Football.

Following an approach of ecological inference,[1] we match residents' preferences, which are expressed in voting behaviour, to socio-economic and lifestyle-specific attributes in a spatial economic analysis. We investigate at the voting-precinct level the 2001 stadium referendum on the Allianz-Arena in Munich, where residents were asked about the public provision of the infrastructure and a site for the new home venue of the professional football teams FC Bayern München and 1860 Munich. Assuming rationality, the clear majority vote for the project in 2001 indicates that at the city level, the majority of residents expected the social costs that they would have to bear to be offset by an increase in their utility. As there is scant evidence for the positive economic impact of stadium projects (MATHESON, 2008), civic pride, wellbeing, and happiness, as well as consumption benefits and public good benefits, such as the status of being a "world-class city", have been suggested as sources of utility increase (CARLINO & COULSON, 2004; COATES & HUMPHREYS, 2006; GROOTHUIS, JOHNSON, & WHITEHEAD, 2004; SZYMANSKI & KAVETSOS, 2008). Lifestyle groups that derive the largest net utility are expected to exhibit the largest sympathy for the commitment of public funds and hence the largest probability of voting in favour of the referendum. The rates of approval for the referendum should therefore vary according to the lifestyle group composition of residents.

Empirical analyses of referendums on stadia (AGOSTINI, QUIGLEY, & SMOLENSKY, 1997; AHLFELDT & MAENNIG, 2009b; COATES & HUMPHREYS, 2006) and cultural institutions (RUSHTON, 2005; SCHULZE & URSPRUNG, 2000) provide evidence for the relevance of socio-economic and demographic attributes, such as age and economic wealth, for residents' consumption preferences. In addition to these established variables, we approximate residents' lifestyles by the probability of households belonging to Sinus milieus defined in chapter 2.2, which we show to

[1] See SHIVELY (1969), KING (1997), or KING, ROSEN & TANNER (2004) for a discussion of the underlying assumptions of ecological inference. A more detailed discussion is in the data section.

significantly influence the share of yes-votes for the Allianz-Arena project. Our results are generally confirmed by the consideration of resident's political orientation as an alternative proxy for lifestyle. Both lifestyle-orientated approaches perform superior to a more "standard" set of control variables.

Our empirical approaches control for stadium proximity effects as well as spatial dependency. While the compositions of residents in the neighbourhoods of the new as well as the old stadium differ from the city average, our results indicate that these differences cannot account for spatial heterogeneity in the voting pattern, as suggested by COATES & HUMPHREYS (2006).

2 Background and Data

2.1 The Stadium Project

Professional football in the Bavarian capital, Munich, is shaped by the two sports clubs TSV 1860 München and FC Bayern München. While the latter was the first team to play in the 1972 Olympic stadium since the 1972/1973 season, TSV 1860 had long played in the stadium "Grünwalder Straße" and only partly switched to the Olympic stadium (N. N., 2007). By the mid-1990s, however, the Olympic stadium started to fall short of the demands of the club directors and fans of FC Bayern München for a modern football stadium. Various plans to renovate the Olympic stadium or to build a new stadium for football were discussed (PAULI, 2001). However, the planned renovation of the Olympic stadium failed because the architect and copyright holder Behnisch withdrew his own renovation plans following criticism expressed by architectural experts and art historians (DÜRR, 2000).

In early 2001, FC Bayern München and TSV 1860 München agreed to construct a new arena, designed exclusively for football, with about 66,000 seats, as soon as the city provided a suitable location (N. N., 2001a). In July 2001, the Munich city council finally opted for the Fröttmaning district in the northeastern suburbs (DÜRR, 2000). This decision marked the opening of the architectural competition for the new stadium, which, as a stated objective, placed creation of a new land-

mark for the city of Munich on the agenda. A referendum entitled "Stadium construction in Fröttmaning – World Cup 2006 football in Munich" on the construction project was scheduled for October 21, 2001 (HORNBERGER, 2001). It comprised, on the one hand, the passing of the planning law requirements for the construction of a football stadium at the location of the "Fröttmaning industrial estate" and the complete absorption of construction costs by the Munich football clubs. On the other hand, the city of Munich would commit to providing a municipal plot in the framework of a long-term inheritance rights contract and to contribute to the usual extent to the necessary infrastructure measures (in particular, the construction of public rail transportation and road connections) (N. N., 2001c). It should be noted here that this "usual public contribution" amounted to as much as €210 million, of which the city of Munich provided €107 million (N. N., 2005). The plot itself was valued at about €85 million (N. N., 2001b).

A significant majority of 65.7% voted in favour of the new stadium. In February 2002, the two football clubs decided in favour of a model submitted by the architects Herzog & DeMeuron among a range of spectacular drafts from prominent architects. As a key-feature, the winning design is a illuminated facade, which adopts the colours of the resident teams F.C. Bayern and 1860 München. AHLFELDT & MAENNIG (in press) provide a detailed discussion on "iconic" stadia, including the Munich Allianz-Arena.

2.2 Lifestyle Groups and Proxy Variables

Although the concept of lifestyle[2] was previously mentioned in 1900 by SIMMEL (2001) and in 1922 by WEBER (2002), it did not earn much attention before the mid-1980s (MOCHMANN & EL-MENOUAR, 2005; OTTE, 2008). VEAL (1993) summarises various descriptions and defines lifestyle as "the pattern of individual and social behavior characteristic for an individual or a group" (p. 249). GEIßLER (2002) argues that the concept of lifestyle is focused on consumption and leisure but also refers to family, taste and culture. Sometimes, other aspects/spheres of life

[2] The terms "lifestyle group" and "social milieu" are often used synonymously, also by Sinus Sociovision.

such as occupation or politics are included. Therefore, the lifestyle approach accounts for different ways of life beyond the class-specific observable/objective socio-structural variables, such as income and education. Nevertheless, lifestyle is not independent of class or strata, as behaviour is also affected by family background and level of education (HRADIL, 2001; MOCHMANN & EL-MENOUAR, 2005; OTTE, 2008). To consider the inequality of societies and populations in empirical analysis, the concept of class seems to be easier to employ, as indicators like income or education are used. However, due to increasing individualisation of inequalities (BECK, 1983), class society has been increasingly questioned in the "death of class" debate (e.g. CLARK & LIPSET, 1991; CLARK, LIPSET, & REMPEL, 1993; GRUSKY, 2001; PAKULSKI & WATERS, 1996). The lifestyle approach includes – in addition to class-specific indicators – tastes, behaviour, attitudes and values (MOCHMANN & EL-MENOUAR, 2005; OTTE, 2008; VEAL, 1993). Therefore, it is better suited to account for inequalities, but is also associated with more difficult data collection.

On this background, the voting behaviour on the public consultation on stadium construction in Fröttmaning is likely to have been influenced by lifestyle in two ways. Firstly, selected lifestyle groups can have stronger preferences for football consumption, spending more of their leisure time playing or watching football. Secondly, "highbrow" lifestyle groups without particular football preferences can favour the new construction because of its "iconic" architecture. Their attitude may result from cultural interests and aesthetic sensibility.

In order to capture lifestyle groups, we employ two proxy variable sets based on political party affiliation and the MOSAIC milieu classification scheme. The MOSAIC milieus have been developed for direct marketing applications and correspond to the Sinus milieus created by the market research institute Sinus Sociovision with a spatial reference. Groups of like-minded individuals are classified into ten milieus, which can be visualised in a two-dimensional diagram with strata affiliation at the vertical axis and value orientation at the horizontal axis (see Figure A1 in the appendix). Socio-economic factors as well as general attitudes of life

or consumption are included (OTTE, 2008; SINUS-SOCIOVISION, 2007a). The ten milieus can be described as follows:

Tab. 1 Sinus-Milieus, Grouped by Superordinate Milieus

Reference Milieus	
Establishment	Self-conscious, highbrow and high income Success-oriented, realistic can-do mindset High-level, aesthetic and selected consumption patterns
Post-Materialist	Highbrow, self-conscious and tolerant/liberal Individualistic attitudes and without striving for social status
Modern Performer	Unconventional and performance-oriented Intensive life – job-related and personal Multi-optionality and flexibility Young and intellectual people with high income
Traditional Milieus	
Conservative	Elderly educated middle-class Focus on tradition and values with humanistic sense of responsibility. Conservative mindsets with focus on stabilisation and protection of culture
Traditionalist	Mainly retired workers or employees, war-generation (WW II) Values such as tidiness, decency, or acquittal
GDR-Nostalgic	Socialistic ideas of justice and solidarity Refusing capitalism, globalisation, and prestigious consumption
Mainstream Milieus	
Middle-Class Mainstream	Status-oriented, modern Willing to perform and striving for comfortable, secure life with family and friends
Consumer-Materialist	Lowbrow milieu Low purchasing power but preference for status-oriented consumption Trying to compensate for social disadvantage
Hedonistic Milieus	
Experimentalist	Individualistic, spontaneous, and stylish with hedonistic attitudes Living in antagonisms Modern occupation and high education
Hedonistic	Trend-oriented and fun-loving Denail of conventions and behavioural expectations Young workers, employees or apprentices

Source: ALLGAYER (2002a, 2002b, 2002c, 2002d, 2003), FISCHER, 2002a, 2002b, 2002c, 2002d, 2002e), and SINUS-SOCIOVISION (2009).

As an alternative approach to capture lifestyle-specific preferences, we consider political party affiliation in combination with traditional socio-economic variables. Over the past decades, the strength of traditional policy affiliations has steadily declined. Therefore, the identification of "typical" voters has become difficult (MOCHMANN & EL-MENOUAR, 2005; OTTE, 2008). At the same time, the political landscape changes due to the mediatisation, the personalisation of election campaigns and the constitution of symbolic images of the parties (OTTE, 2008). The voter can thus adjust his lifestyle with the "political styles" of the parties (OTTE, 1997). As a result, the identification with and the vote for political parties is ultimately, among other factors, conditional on lifestyle. The political landscape in Munich is mainly shaped by the following parties:

- *CSU (Christian Social Union):* Conservative, centre-right party with its origins in Christian values. At the federal level, it is associated with the CDU (Christian Democratic Union).
- *SPD (Social Democratic Party of Germany)*: Centre-left party with its origins as a workers' party.
- *FDP (Free Democratic Party):* Liberal, centrist party with a high affinity for entrepreneurs.
- *Bündnis90 / Die Grünen (Alliance90 / The Greens):* Green, centre-left party with a focus on human rights and the protection of nature.

Note that in combination with standard indicators of economic wealth, an implicit classification similar to the two-dimensional Sinus scheme emerges, with strata affiliation (vertical axis) represented by income proxies and value orientation (horizontal axis) captured by political party affiliation. While Sinus-clusters potentially capture lifestyle in greater complexity, their generation, in practice, represents a kind of black box, complicating the interpretation of empirical results in comparison to the more tangible data on political voting behaviour.

2.3 Data

The study area examined in this work is the autonomous administrative city of Munich, the capital of the Free State of Bavaria. At the time of the assessment,

October 21, 2001, some 1,259,730 inhabitants were living in Munich, in an area of 310.41 km^2. The municipal area of Munich, within the boundaries of October 2001, was subdivided into 25 municipal districts, 106 constituent districts and 455 subdistricts. Aside from the spatial structuring of the municipal districts, the municipal area could be further subdivided into 656 voting precincts at the time of the assessment. However, in the event of smaller ballots, such as a public consultation, a different division of the voting precinct was made for reasons of cost and a lower turnout. Accordingly, for the public consultation concerning the building of the new stadium, the municipal area was divided into 311 voting precincts.

On the occasion of the public consultation on the new stadium in Fröttmaning, 902,061 citizens were entitled to vote. Those eligible to vote were all German nationals or nationals of other EU member states who had reached the age of 18 on polling day and who had been registered as predominantly resident in Munich for at least three months. Of the 338,225 citizens who took part in the vote, a significant majority of 65.7% voted in favour of the construction of the new stadium. This result and the 37.5% voter turnout were the highest in a Munich public consultation since their introduction in 1996 (N. N., 2001d, 2001e). Among the total 311 voting precincts, there were 50 postal vote districts, which cannot be further considered in this assessment because of a lack of spatial classification by the Munich electoral office. The postal vote districts accounted for 60,054 of the total 338,225 votes cast. After the postal vote districts are subtracted, 261 constituencies or polling stations remain in the actual assessment, in which 278,171 Munich voters cast their votes on polling day. The political party affiliation as a first proxy variable for lifestyle groups results from the federal election on September 22, 2002. In this election, 837,846 citizens were entitled to vote, of which 80.3% voted on polling day. All voting data were obtained from the Munich statistics office or the Munich district administration department (MÜNCHEN, 2007; N. N., 2001e).

The second proxy variable set are the MOSAIC Milieus, which are based on the Sinus milieus, calibrated by the firm microm Micromarketing-Systeme und Con-

sult GmbH, which links the Sinus milieus with its own microgeographic dataset on the structure of consumers, thus determining milieu probabilities (SINUS-SOCIOVISION, 2007b). The local statistical office provided milieu probabilities for the 455 Munich subdistricts in 2005, as data for 2001 were not available. Given that the exact process to ascertain the Sinus milieus and MOSAIC milieu probabilities is subject to confidentiality considerations, the lack of publication and the absence of measures for validity and reliability certainly bear some risk of misinterpretation in empirical analyses (HARTMANN, 1999).

In addition to the lifestyle indicators, data on the demographic structure of the population, such as their age, sex and the proportion of foreigners in Germany and the EU as of September 30, 2001 are included in our analysis. These data were available at the level of the 656 voting precincts and aggregated to the 261 precincts according to the official register. Furthermore, data on the distribution of purchasing power was obtained from the Munich statistics office (MÜNCHEN, 2007). Purchasing power was derived from a prognosis of the consumer research society Gesellschaft für Konsumforschung (GfK) for the year 2004. Here, "purchasing power" indicates the income of a household available for consumer purposes, adjusted for taxes and social security contributions. No purchasing power data for 2001 were available.

The data on purchasing power, party affiliation and milieu probabilities have been adjusted to the level of the 261 voting precincts using GIS (Geographical Information System) and standard area interpolation techniques (AHLFELDT & MAENNIG, 2009b; ARNTZ & WILKE, 2007; GOODCHILD & LAM, 1980). Our empirical analyses are based on the observation of grouped data at the precinct level, as individual data on residents' preferences were not available. Application of the methodology of "ecological inference", similar to SCHULZE & URSPRUNG (2000) and RUSHTON (2005), we infer the probability of a voter, who is considered to be representative for a precinct, supporting the project. An extensive discussion of the underlying assumptions of ecological inference can be found in SHIVELY (1969), KING (1997), or KING, ROSEN & TANNER (2004).

3 Empirical Results

3.1 Stadia Neighbourhood Composition

While little evidence is available for direct economic effects arising from stadia or stadium construction at a city level, the literature provides greater evidence for significant neighbourhood spillovers within a range of 3-5 km. Positive effects are found in real estate prices (AHLFELDT & MAENNIG, 2008, 2009a; CARLINO & COULSON, 2004; TU, 2005) or voting patterns (COATES & HUMPHREYS, 2006). In contrast, net proximity cost as identified in the Munich stadium referendum (AHLFELDT & MAENNIG, 2009b; AHLFELDT, MAENNIG, & SCHOLZ, in press).[3] COATES & HUMPHREYS (2006) argue that, among other reasons, proximity effects of stadia may arise from residents with different preferences sorting in distinct neighbourhoods. This rationale leads us to the beginning of our empirical investigations by comparing the residential compositions in the neighbourhoods of the "new" (Allianz-Arena) and the "old" (Olympiastadion) stadia to the rest of the city. We conduct a series of separate regressions of the log of probability of a household belonging to milieu *J* at precinct *i* ($PMil^J_i$) on a constant as well as a dummy variable (IM^J_i) denoting all voting precincts within 3 km in the case of the Olympic Stadium (Olympiastadion) and 4 km in the case of the Allianz-Arena (Fröttmaning). Within these areas, significant proximity effects are revealed in the voting pattern (AHLFELDT & MAENNIG, 2009b).

$$\log\left(PMil_i^J\right) = \alpha_0 + \alpha_1 IM_i^J + \varepsilon_i, \qquad (1)$$

where α_0 and α_1 are the coefficients to be estimated and ε_i is the error term. The percentage difference (*PD*) between the probabilities of belonging to a certain milieu group within a respective impact area and the rest of the city are inferred from the coefficient α_1 according to the standard interpretation in semi-log models.[4]

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[3] DEHRING, DEPKEN & WARD (2007) offer ambiguous evidence.

[4] $PD = (\exp(\alpha_1)-1)*100$ (HALVORSEN & PALMQUIST, 1980).

A first descriptive assessment of heterogeneity in residents' preferences is provided by exploring the (spatial) correlation between the proportion of yes-votes and MOSAIC milieu probabilities. Table 1 shows the respective differentials in milieu probabilities as well as the correlation coefficients between the share of yes-votes and the probabilities of belonging to certain MOSAIC milieus (Corr.) for the proposed stadium locations. Table 2 shows the results of a similar analysis for political party affiliation.

Tab. 2 Residential Composition and Stadium Attitude (MOSAIC milieus)

	PD		Corr.
	Olympic Stadium	Allianz-Arena	
Conservative	-12.20***	.37	.266***
Establishment	4.34***	-10.00***	-.384***
Post-Materialist	4.36	-17.50***	-.525***
Modern Performer	3.00**	-.09	-.294***
Traditionalist	-2.19	5.32	.536***
GDR-Nostalgic	-2.48	17.83***	.452***
Middle-Class Mainstream	-10.20***	19.44**	.432***
Consumer-Materialist	-2.87**	8.88**	.338***
Experimentalist	10.05***	1.53	-.131**
Hedonistic	1.97***	1.85	.008

Notes: PD denotes the percentage difference between the respective probabilities of a household belonging to a certain milieu within a 3 km (4 km) radius around the Olympic Stadium (Allianz-Arena) and the average milieu probabilities for the rest of the city. Corr. is the correlation coefficient between the share of yes-votes in the Allianz-Arena referendum and the milieu probability across voting precincts.***/**/* denote significance at the 1/5/10% levels, respectively.

Tab. 3 Residential Composition and Stadium Attitude (Political Parties)

	PD		Corr.
	Olympic Stadium	Allianz-Arena	
CSU	-11.86***	14.18*	.477***
SPD	6.69***	6.76	.264***
FDP	1.76	-18.58**	-.348***
Die Grünen	23.69***	-35.73***	-.652***
Right	-10.36***	10.07	.400***
Left	12.08***	-9.53	-.439***

Notes: See Table 2.

From the results of Tables 2 and 3, it is evident that the neighbourhoods' compositions significantly differ from each other as well as relative to that of the rest of the city. At the same time, there are significant correlations between the propor-

tion of yes-votes and lifestyle proxies, pointing to significantly different attitudes towards the project. For example, across precincts, the proportion of yes-votes decreases with the increasing probability of belonging to a *Societal Reference Milieu* (*Establishment*, *Post-Materialist* and *Modern Performers*). These milieus tend to oppose the project. In contrast, the two *Mainstream-Milieus*, *Middle-Class Mainstream* and *Consumer-Materialist*, as well as the milieus with traditional values (*Conservative*, *GDR-Nostalgic* and *Traditionalist*) tend to support the project. The correlation between yes-votes and the *Modern Milieus*, *Hedonistic* and *Experimentalist*, is insignificant or has a small value, respectively.

A similar pattern emerges from the analysis of political party affiliation. The probability of voting for a traditional mainstream party, namely *SPD* and *CSU*, positively correlates with the share of yes-votes, while the smaller and more individualistic or liberal parties, such as *Die Grünen* and *FDP,* exhibit a negative correlation. When the right wing (*CSU* and *FDP*) and *left* wing (*SPD* and *Die Grünen*) are considered jointly, a broad tendency of conservative/bourgeois lifestyles to support the project becomes apparent. Notably, there is quite a high concentration of residents belonging to milieus or parties that have a particularly positive attitude towards the project in the vicinity of the Allianz-Arena. In contrast, we find higher proportions of milieu groups or party affiliations that tended to oppose the project within the impact area of the Olympic Stadium. Therefore, the chosen site potentially minimises local opposition, particularly when compared to the considered alternative that was near Olympic Park. These results do not support the hypothesis of residential sorting with respect to preferences for professional football in the neighbourhood of the Olympic Stadium, nor can the opposition to the new stadium be explained by the residential composition in proximity to the Allianz-Arena.

3.2 Lifestyles and Stadia Preferences

Three spatial econometric approaches are used in order to reveal lifestyle specific impacts on the proportion of yes-votes, conditional on socio-economic characteristics. All models control for proximity effects using two neighbourhood dummy variables, denoting precincts within the impact areas of Allianz-Arena and Olym-

pic Stadium. Additionally, by introducing interaction terms with continuous distance measures, proximity effects are allowed to diminish with distance. This specification proved to be efficient after careful evaluation on the basis of parametric and non-parametric estimates (AHLFELDT & MAENNIG, 2009b). The OLS method was used in the studies of COATES & HUMPHREYS (2006) and AGOSTINI, QUIGLEY & SMOLENSKY (1997) for the empirical analysis of voting behaviour in consultations concerning American stadium projects. Accordingly, the dependent variable in our regression $pcvy_i$ represents the percentage of yes-votes in the respective constituencies *i* in the Munich public consultation. The explanatory variables are, aside from geographic variables capturing proximity effects, the economic and demographic characteristics of the voters in constituency *i* including the milieu proxy variables:

$$pcvy_i = \alpha + \beta X_i + \varepsilon_i \,, \tag{2}$$

where X_i is the vector of the explanatory variables (including a constant), β denotes the vector of the unknown parameter to be assessed and ε_i is the error term.[5]

Political Party Affiliation

Table 4 presents OLS coefficient estimates for the percentage shares of total votes, which the four biggest political parties received in the 2002 federal elections. The baseline model, including estimation results, is presented in Table A1 in the appendix. Table 3 shows an increase in R-squared from 0.55 (see the basic model in Table A1) up to 0.76 following the introduction of voting control variables, which are highly statistically significant. Furthermore, these results are consistent with the unconditional correlation coefficients presented in Table 3. Voting for the mainstream parties *CSU* und *SPD* indicates a higher probability to vote in favour of the new stadium, while affiliation with the *FDP* and *Die Grünen* connotes a negative impact on the yes-votes.

[5] We address heteroscedasticity using the standard White/Huber "sandwich" correction.

Tab. 4 OLS Estimates for Political Party Affiliation

	1	2	3	4	5	6	7	8
CSU [%]	.0048*** (-.00067)						.0068*** (-.00063)	
SPD [%]		.0047*** (-.00087)					.0074*** (-.00079)	
FDP [%]			-.0091*** (-.00261)					-.0055*** (-.0018)
Die Grünen [%]				-.0074*** (-.00062)				-.0071*** (-.00060)
Left [%]					-.0042*** (-.00067)			
Right [%]						.0035*** (-.00066)		
R-squared	.633	.604	.579	.745	.612	.599	.754	.756

Notes: Endogenous variable is the share of yes votes in all models. Only results for political parties are presented. Estimation results for the baseline model, including control variables, are provided in Table A1 in Appendix 1. Robust standard errors are presented in parentheses. ***/**/* denote significance at the 1/5/10% levels, respectively.

The standard Lagrange multiplier (LM) test for spatial dependency suggests the appropriateness of a spatial error correction (SAR) model to correct for spatial structure in the error term (ε_i), which may have been created by omission of variables that correlated across space and/or spatial measurement errors.[6]

$$\varepsilon = \lambda W \varepsilon + \mu, \tag{3}$$

where parameter λ corrects for the spatial correlation in the error term ε; W is a rook contiguity weights matrix and μ is an independent and identically distributed vector of error terms. SAR model results are presented in Table 5.

[6] Test scores reject the spatial lag model in favor of the error correction model. Methodological aspects of spatial error and spatial lag models are covered by ANSELIN (1988) and ANSELIN & BERA (1998).

Tab. 5 SAR Estimates for Political Party Affiliation

	1	2	3	4	5	6	7	8
CSU [%]	.0032*** (.00063) [.3989]						.0060*** (.00057) [.7432]	
SPD [%]		.0044*** (.00065) [.3158]					.0073*** (.00064) [.5253]	
FDP [%]			-.0082*** (.00183) [-.2105]					-.0058*** (.00157) [-.7209]
Die Grünen [%]				-.0070*** (.00056) [-.7575]				-.0066*** (.00055) [-.1488]
Left [%]					-.0023*** (.00064) [-.2714]			
Right [%]						.0015** (.00061) [.1935]		
(Pseudo) R-squared	.663	.699	.670	.766	.653	.647	.774	.778

Notes: Endogenous variable is the share of yes votes in all models. Only results for political parties are presented. Estimation results for the baseline model, including control variables, are provided in Table A1 in Appendix 1. Standard errors (in parentheses) are robust for spatial autocorrelation. Standardised coefficients are in brackets. ***/**/* denote significance at the 1/5/10% levels, respectively.

The results remain qualitatively unchanged, indicating the robustness of the estimates to problems arising from spatial dependency. The coefficients show the same sign and similar magnitudes as those in Table 4 and are, again, all highly statistically significant. In order to facilitate a straightforward comparison of the estimated impact associated with political party affiliation and the baseline model variables, we calculate standard coefficients that express the relationships in terms of standard deviations.[7] In all models, the magnitude of standardised

[7] The coefficients were standardised according to the following formula: $\beta_{j,s} = \beta_j \cdot \frac{S.D.(x_j)}{S.D.(y)}$, where $\beta_{j,s}$ denotes the standardised coefficient, β_j is the estimated coefficient on variable *j*, with the standard deviation of exogenous variable set as x_j and the standard deviation of endogenous variable set as *y*.

coefficients for political affiliation exceeds the influence of purchasing power, unemployment rate and the proportion of the population that is male. Furthermore, in most of the models, the coefficients for age variables are smaller than the coefficients for political party affiliation. Only the distance variables, especially variables related to the new stadium in Fröttmaning, show a higher magnitude in most models. Note that this impact, by definition of the variables, is highly localised.

To ensure the comparability and validity of our results, we repeat all estimates using binary choice (BC) models, which has become a common practice in the empirical analysis of behaviour at polls in public consultations (DEACON & SHAPIRO, 1975; KAHN & MATSUSAKA, 1997; KLINE & WICHELNS, 1994; RUSHTON, 2005; SCHULZE & URSPRUNG, 2000). Since the results remain qualitatively unchanged in all models, we leave the discussion of the strategy and the presentation of results to Table A2 in the appendix.

MOSAIC milieus

The same estimation strategies are applied to the set of MOSAIC milieu proxy variables. Table 6 shows coefficient estimates for milieu variables introduced into the basic model specifications presented in Table A3. We restrict the presentation of estimation results to the coefficients and standard errors of interest, accompanied by the respective standardised coefficients. Since milieus are defined, among other factors, on the basis of households' economic wealth, we exclude *unemployment* and *purchasing power* in order to avoid collinearity.[8] Except for the coefficient estimate for *Modern Performers* in the SAR model, the coefficients are highly significant in all models. Additionally, the direction of influence remains the same across the three estimation methods. In comparison to the unconditional correlation coefficients presented in Table 2, however, there are some changes. The milieus of *Establishment* and *Post-Materialists* as well as the milieu

[8] Coefficient estimates of control variables are only marginally affected by the altered specifications.

of *Traditionalists* still oppose the project, but *Conservatives*, *Experimentalists* and the *Hedonistic* milieu tend to support the project. The positive attitude of mainstream milieus (*Middle-Class, Mainstream* and *Consumer-Materialists*) towards new stadium construction remains unchanged.[9]

Tab. 6 Support for the Allianz-Arena Project by MOSAIC Milieus

	OLS	SAR	BC
Conservative [%]	-.01116**	-.01211***	-.04665**
	(-.00432)	(.00401)	(-.01974)
	[.533]	[.642]	[.526]
Establishment [%]	-.02214***	-.02150***	-.10000***
	(-.00345)	(.00387)	(-.01690)
	[.584]	[.666]	[.575]
Post-Materialist [%]	-.01313***	-.01411***	-.05913***
	(-.00108)	(.00120)	(-.00519)
	[.696]	[.755]	[.681]
Modern Performer [%]	.01608**	.00786	.06688**
	(-.00646)	(.00513)	(-.02744)
	[.534]	[.632]	[.526]
Traditionalist [%]	.02424***	.02089***	.10820***
	(-.00349)	(.00328)	(-.01545)
	[.605]	[.676]	[.595]
Middle-Class Mainstream [%]	.01164***	.01145***	.05422***
	(-.00274)	(.00270)	(-.01179)
	[.557]	[.652]	[.553]
Consumer-Materialist [%]	.03327***	.03362***	.14960***
	(-.00309)	(.00343)	(-.01569)
	[.661]	[.726]	[.645]
Experimentalist [%]	.01341***	.01243***	.05523***
	(-.00320)	(.00302)	(-.01321)
	[.559]	[.652]	[.547]
Hedonistic [%]	.05064***	.04899***	.21840***
	(-.00726)	(.00666)	(-.03198)
	[.606]	[.693]	[.591]

Notes: The baseline model is presented in Table A3 in the appendix. Standard errors (in parentheses) are heteroscedastically robust for OLS and BC and also adjusted for spatial dependency in SAR estimates. Estimations of the coefficients of Determination are presented in brackets. ***/**/* denote significance at the 1/5/10% levels, respectively.

Due to presentation of milieu probabilities in percentages and to a particularly high spatial correlation, not all milieu probabilities can be used as explanatory control variables at the same time. In order to verify the validity of the results, we

[9] The milieu of *GDR-Nostalgics* is not listed due to the lacking relevance of this milieu in Munich.

jointly estimate sets of milieu variables that are not subject to collinearity problems and are defined on the basis of a cluster analysis. Table 7 presents the robust SAR estimates. Results for OLS and binary choice models are qualitatively unchanged and presented in Tables A4 and A5.

Tab. 7 Robustness Checks for Approval by MOSAIC Milieus (SAR)

	1	2	3
Establishment [%]	-.0106** (.0043)	-.0099*** ieus.• T-	-.0084* (.0044)
Post-Materialist [%]		-.0129*** (.0013)	
Modern Performer [%]		.0010 (.0042)	
Traditionalist [%]	.0119*** (.0032)		.0149*** (.0030)
Conservative [%]			-.0034 (.0044)
Middle-Class Mainstream [%]	.0078** (.0031)		
Consumer-Materialist [%]			.0244*** (.0048)
Hedonistic [%]	.0464*** (.0066)		
R-squared	.751	.762	.754

Notes: Baseline model is in Table A3 in the appendix. Standard errors (in parentheses) are adjusted for spatial dependency. ***/**/* denote significance at the 1/5/10% level.

Model 1 includes one milieu out of each of the superordinate milieus (*Societal Reference Milieus, Traditional Milieus, Mainstream Milieus, Hedonistic Milieus*, see Table 1) after checking with the results of the cluster analysis.[10] The *Societal Reference Milieus* are represented by the *Establishment*, the *Mainstream Milieus* by *Middle-Class Mainstream*; the *Hedonistic* milieu is a proxy for *Modern Milieus* and the *Traditionalists* for the *Traditional Milieus*. Each coefficient in this model is

[10] We chose the milieus that cluster at later stages. For example, the superordinated *Traditional Milieu* comprises *Conservatives* and *Traditionalists*. The analyses of ward clusters show that the *Conservatives* cluster at an earlier stage with *Middle-Class Mainstream* than with the *Traditionalists*. Therefore, the model includes the *Traditionalists*. The results of cluster analysis are available from the authors on request.

highly significant and shows the same sign compared to Table 6. Model 2 considers the three Reference Milieus as lower-status milieus that often strive to belong to the higher-order milieus and therefore imitate their behaviour and tastes. In this model, the coefficient of *Modern Performers* is again insignificant, while the highly significant coefficients of the other milieus indicate a negative attitude towards the new stadium. Finally, in model 3, the different attitudes within a superordinate milieu were examined. Therefore, we employ both *Traditional Milieus* (*Traditionalists* and *Conservatives*) in addition to *Establishment* and *Consumer-Materialists*. The *Modern Milieus* are excluded from this model in order to avoid collinearity. While the direction of influence remains the same for all milieus, the significance level of *Traditionalists* declines and the coefficient of *Conservatives* is now insignificant.

In all specifications, after controlling for proximity effects, the employed lifestyle proxy variables significantly contribute to the explanation of the spatial voting pattern. These results strongly support the existence of heterogeneity in the expected net utility of the project, which may be attributable to either varying (consumption) benefits or subjective assessments of the opportunity cost of the project, which includes the committed public funds.

Furthermore, our results strongly indicate that estimated proximity effects at the future and existing stadium locations are not attributable to the composition of residents and their preferences. The neighbourhood of the Allianz-Arena is dominated by lifestyle groups that generally supported the project. The location choice of the new stadium therefore seems well considered, confirming that the agenda setter chose an appropriate location in anticipation of lobbying pressure, as predicted by theory.[11] Similarly, residential composition does not explain the support of Allianz Arena project in the vicinity of the old stadium. In contrast, if lifestyle group composition is taken into account, there are significant localised effects in

[11] The theoretical political economy literature assumes that policy produces efficient outcomes, because politicians tend to base decisions on principles and function efficiently when subject to symmetrical pressures (GROSSMAN & HELPMAN, 1994).

the neighbourhood of the existing stadium even in the SAR models, which otherwise yield insignificant results. This finding reflects that the neighbourhood's inhabitants generally belong to lifestyle groups that oppose the stadium (see section 3.1). For the vicinity of the Olympic Stadium, we therefore reject the hypothesis of COATES & HUMPHREYS (2006) stating that residents can be sorted according to their preferences for professional football. At the least, other determinants are much more influential for the residential location choice. It might be that the Olympic Park, including the Olympic Stadium, is regarded as a location amenity due to the exemplary architecture and urban design of landscape and facilities rather than for its functionality as a professional football stadium. In fact, our analysis shows that in the vicinity of the Olympic Stadium, the probability of belonging to a reference milieu is distinctly elevated. These milieus, sharing some similarities with the increasingly discussed "creative class" (FLORIDA, 2002), generally enjoy a higher education and exhibit a particular sensitivity for amenities such as culture and architecture. By supporting the Allianz-Arena project, residents sharing preferences for cutting-edge architecture could at the same time promote the construction of a new icon in their city in addition to the removal of the football fans and related congestion, given that the conservation of the Olympic Park and Stadium was assured due to heritage considerations.

4 Conclusion

This study investigates empirically whether there is evidence for consumer preferences varying significantly across lifestyle groups, as suggested in the death-of-class debate. We find that lifestyle proxy variables contribute significantly to the explanation of the voting outcome in the 2001 referendum on the Munich Allianz-Arena, revealing significant relationships where coefficients on standard indicators of economic wealth such as household income or rate of unemployment are not statistically significant when accounting for spatial dependency. This indicates lifestyle-specific consumption and public good (net) benefits derived from professional football at a landmark stadium. Briefly summarised, mainstream lifestyle groups and modern milieus , as well as voters of mainstream

parties (*CSU* and *SPD*), tended to vote in favour of the new stadium project. In contrast, highbrow lifestyle groups (*Conservatives*, *Post-Materialists*, *Establishment*) and voters for liberals (*FDP*) and environmentalists (*Die Grünen*) opposed the project.[12] In the case of MOSAIC Milieus, all milieus voting in opposition are upper-middle or upper class milieus.[13] These results confirm the widely held assumption that the preference for professional football is characteristic for substrata or middle strata. Note, however, that traditional socio-economic indicators such as income and rate of unemployment are not statistically significant when accounting for spatial dependency. This observation is compelling evidence that lifestyle, preferences, tastes and attitudes are not simply linearly constituted along an income-ray, but follow more complex social patterns. Despite their generally high explanatory power, lifestyle characteristics do not explain a significant spatial variation in the voting pattern. Additionally, the lifestyle-specific neighbourhood composition in the vicinity of the existing Olympic stadium cannot explain the support of the Allianz-Arena project, nor is the strong opposition within the neighbourhood of the Allianz-Arena in line with the general lifestyle attitudes of the inhabitants.

Although the milieu probabilities are, with few exceptions, highly significant in all models, the use of these MOSAIC milieus in multivariate empirical analyses is substantially complicated by the unclear definition and multicollinearity problems of the mutual attraction (repulsion) of milieus. The considered alternative approach to capture lifestyle through a combination of more tangible variables, such as political party affiliation and traditional socio-economic control variables, generally support the findings from the MOSAIC milieu analyses. From our results, the clear recommendation emerges to attach more attention to lifestyle-specific preferences, values and attitudes that potentially influence individual

[12] It can be assumed that political parties recruit their voters in certain milieus. For example, the main parts of *FDP* voters are likely to belong to the *Establishment*. Voters of *Die Grünen* und *Post-Materialists* are likely to share similar values.

[13] Only the *Modern Performers* as a highbrow upper-middle class milieu shows a weak tendency of supporting the project. Even this relationship becomes insignificant when accounting for spatial dependency.

behaviour and market outcomes. Researchers should be aware of omitted lifestyle characteristics in spatial voting analyses as well as problems of spatial dependency that arise from otherwise unobservable neighbourhood characteristics being almost certainly correlated across space.

Appendix

When applying binary choice models for the empirical analysis of public votes, the probability P_i that a voter *i* will vote "yes" is related to observable socio-demographic variables of voter *i*. It is assumed that the probability of a "yes" vote can be described with the cumulative logistic probability function

$$P_i = \frac{1}{1+exp-(\alpha+\beta X_i)}, \tag{A1}$$

where α and β are parameters and X_i denotes the vector of the explanatory socio-demographic variables. With this model, it follows that individuals will vote "yes", provided that $(\alpha+\beta X_i)$ exceeds a certain limit. Taking the logarithm and approximating the probability P_i by the percentage share of "yes" votes $pcvy_i$ of constituency *i*, within the constraints of the assumptions underlying all approaches of ecological inference, parameter β can be estimated by employing the following specification:

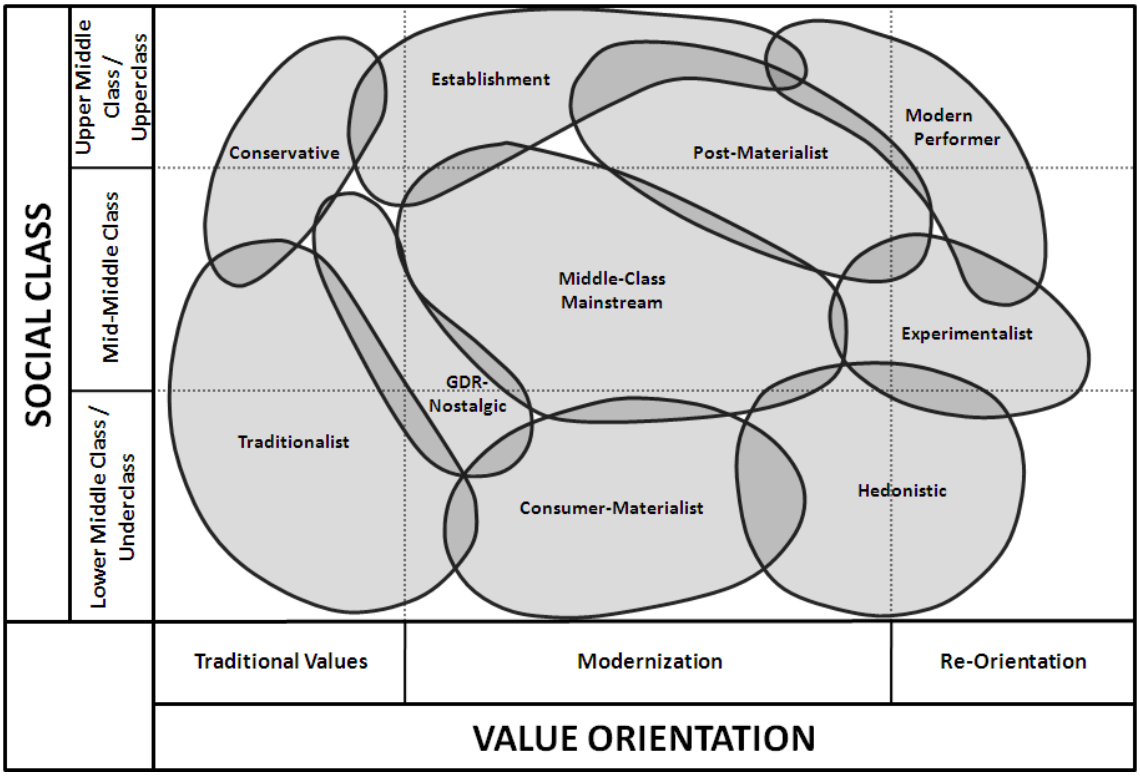
$$\log\left(\frac{pcvy_i}{1-pcvy_i}\right) = \alpha + \beta X_i + \varepsilon_i \,. \tag{A2}$$

Following the standard procedure in binary choice models, we correct for heteroscedasticity by weighting variables with w_i, the inverse of the square root of the variance of the error term ε_i:

$$w_i = \frac{1}{\sqrt{\frac{n_i}{(r_i \cdot (n_i - r_i))}}} \tag{A3}$$

where n_i is the total number of votes and r_i is the number of "yes" votes in voting precinct *i*.

Fig. A1 Sinus-Milieus Germany



Notes: Own illustration.

Source: SINUS-SOCIOVISION (2007a).

Tab. A1 Basic Models for Political Party Affiliation

	OLS	SAR	SAR (standardised)	BC
Proportion of Population, 18-25 Years Old [%]	.0076*** (-.0025)	.0060*** (.0021)	.1616***	.0332*** (-.0114)
Proportion of Population, 25-35 Years Old [%]	-.0046*** (-.0012)	-.0034*** (.0011)	-.2785***	-.0204*** (-.0054)
Proportion of Population, 35-45 Years Old [%]	.0045** (-.0019)	.0023 (.0016)	.1127	.0232*** (-.0083)
Proportion of Population, 60+ Years Old [%]	.0042*** (-.0011)	.0022** (.0011)	.2548**	.0208*** (-.0054)
Unemployment Rate [%]	.0058** (-.0024)	.0057*** (.0020)	.6551***	.0247** (-.0116)
Purchasing Power [1000€ p.c.]	-.0034** (-.0015)	-.0014 (.0015)	-.0003	-.0113* (-.0064)
Proportion of Population, Male [%]	.0072*** (-.0015)	.0025* (.0013)	.1084*	.0348*** (-.0066)
Proportion of Population, EU-Foreigner [%]	-.0004 (-.0013)	-.0005 (.0012)	-.0320	.00003 (-.0059)
Olympic 4k	.0566*** (-.0172)	.0489 (.0307)	1.8750	.2520*** (-.080)
Olympic 4k x Dist. to Olympic Stadium [km]	-.0169*** (-. 0064)	-.0139 (.0085)	-.0001	-.072** (-.0278)
Fröttmaning 5k	-.3220*** (-.0267)	-.3029*** (.0514)	-2.2890***	-1.360*** (-.127)
Fröttmaning 5k x Dist. to Fröttmaning [km]	.0763*** (-.0083)	.0690*** (.0120)	1.4631***	.325*** (-.037)
Constant	.1900 (-.1260)	.4695*** (.1175)	-	-1.725*** (-.554)
R-squared	.55	.644	0,644	.538

Notes: The endogenous variable is the share of yes votes in the OLS and SAR estimates and the log of the odds ratio in the BC model. Olympic 4k (Fröttmaning 5k) denotes precincts within 4 km (5 km) of the Olympic Stadium (Allianz-Arena). See AHLFELDT & MAENNIG (2009) for a more detailed discussion. Standard errors (in parentheses) are robust for spatial autocorrelation in the SAR model.***/**/* denote significance at the 1/5/10% levels, respectively.

Tab. A2 BC Estimates for Political Party Affiliation

	1	2	3	4	5	6	7	8
CSU [%]	.0212*** (-.0029)						.0303*** (-.0026)	
SPD [%]		.0212*** (-.0037)					.0333*** (-.0031)	
FDP [%]			-.0423*** (-.0102)					-.0253*** (.0080)
Die Grünen [%]				-.0330*** (-.0025)				-.0317*** (-.0025)
Left [%]					-.0185*** (-.0030)			
Right [%]						.0156*** (-.0029)		
R-squared	.618	.592	.568	.730	.598	.586	.738	.740

Notes: The endogenous variable is the log of the odds ratio in all models. Only the results for political parties are presented. Estimation results for the baseline model, including control variables are provided in Table A1 in the Appendix 1. Robust standard errors are in parentheses. ***/**/* denote significance at the 1/5/10% levels, respectively.

Tab. A3 Basic Models for Lifestyle Groups

	OLS	SAR	BC
Proportion of Population, 18-25 Years Old [%]	.0088*** (.0025)	.0066*** (.0011)	.0382*** (.0116)
Proportion of Population, 25-35 Years Old [%]	-.0038*** (.0012)	-.0027** (.0021)	-.0171*** (.0054)
Proportion of Population, 35-45 Years Old [%]	.0060*** (.0020)	.0027* (.0016)	.0297*** (.0083)
Proportion of Population, 60+ Years Old [%]	.0054*** (.0012)	.0027** (.0011)	.0255*** (.0053)
Proportion of Population, Male [%]	.0067*** (.0015)	.0023* (.0013)	.0324*** (.0066)
Proportion of Population, EU-Foreigner [%]	.0011 (.0012)	-.00006 (.0012)	.0060 (.0057)
Olympic 4k	.0662*** (.0169)	.0530* (.0318)	.2880*** (.0794)
Olympic 4k x Dist. to Olympic Stadium [km]	.0206 (.0065)	-.0160* (.0088)	-.0855*** (.0278)
Fröttmaning 5k	-.3170*** (.0320)	-.3116*** (.0528)	-1.340*** (.1290)
Fröttmaning 5k x Dist. to Fröttmaning [km]	.0770*** (.0093)	.0715*** (.0123)	.3290*** (.0376)
Constant	.0676 (.1240)	.4246*** (.1096)	-2.2030*** (.530)
R-squared	.520	.630	.515

Notes: The endogenous variable is the share of yes votes in the OLS and SAR estimates and the log of the odds ratio in the BC model. Olympic 4k (Fröttmaning 5k) denotes precincts within 4 km (5 km) of the Olympic Stadium (Allianz-Arena). See AHLFELDT & MAENNIG (2009) for a more detailed discussion. Standard errors (in parentheses) are robust for spatial autocorrelation in the SAR model.***/**/* denote significance at the 1/5/10% levels, respectively.

Tab. A4 Robustness Checks for Approval by Lifestyle Group (OLS)

	1	2	3
Establishment [%]	-.0113*** (-.0040)	-.00110*** (-.0032)	-.0106*** (-.0047)
Post-Materialist [%]		-.00116*** (-.0013)	
Modern Performer [%]		.0043 (-.0047)	
Traditionalist [%]	.0103*** (-.0034)		.0147*** (-.0034)
Conservative [%]			-.0050 (-.0048)
Middle-Class Mainstream [%]	.0091*** (.0031)		
Consumer-Materialist [%]			.0209*** (-.0048)
Hedonistic [%]	.0475*** (-.0068)		
R-squared	.697	.711	.696

Notes: The baseline model is presented in Table A3 in the appendix. Standard errors (in parentheses) are adjusted for spatial dependency. ***/**/* denote significance at the 1/5/10% levels, respectively.

Tab. A5 Robustness Checks for Approval by Lifestyle Group (BC)

	1	2	3
Establishment [%]	-.0515*** (-.0180)	-.0538*** (-.0150)	-.0540*** (-.0211)
Post-Materialist [%]		-.0524*** (-.0054)	
Modern Performer [%]		.0187 (-.0224)	
Traditionalist [%]	.0441*** (-.0158)		.0666*** (-.0148)
Conservative [%]			-.0249 (-.0229)
Middle-Class Mainstream [%]	.0459*** (-.0133)		
Consumer-Materialist [%]			.0919*** (-.0225)
Hedonistic [%]	.2178*** (-.0331)		
R-squared	.687	.698	.682

Notes: The baseline model is presented in Table A3 in the appendix. Standard errors (in parentheses) are adjusted for spatial dependency. ***/**/* denote significance at the 1/5/10% levels, respectively.

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