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Democratic participation and the size of regions: an empirical study using data on German counties

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DEMOCRATIC PARTICIPATION AND THE SIZE OF
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ON GERMAN COUNTIES

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DEMOCRATIC PARTICIPATION AND THE SIZE OF REGIONS: AN EMPIRICAL STUDY USING DATA ON GERMAN COUNTIES

Abstract

The paper examines the relation between political participation and the size of regions taking German counties as observational units. The paper makes several contributions to the literature. To begin with, we measure political participation along two dimensions namely voter turnout, which is the most common variable used in empirical studies, and the number of candidates that run for a seat in county parliaments, a variable that has to the best of our knowledge never been examined at the local level. In addition, we fill a research gap because the issue of size and democracy has not been systematically investigated for Germany up to the present. It is shown, that the size of regions has a rather modest effect upon voter turnout and that active political participation is positively related - with however weak statistical significance - with the size of regions. In addition our results shed some further light on the importance of the educational attainment of the electorate on political participation. Our results indicate a strong positive impact of human capital on turnover. Based on the data presented and the results of our estimates we hypothesize that there is a "hierarchy of elections" on top of which are federal parliament elections whereas local and even state elections seem to be of much inferior interest to the electorate.

JEL Code: D72.

Keywords: voting, voter turnout, size of regions, education.

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1. Introduction

The relation between the size of regions and democracy recently gained a significant importance in German politics and thus the issue is by no means of academic importance only. The government of the German state Mecklenburg-Vorpommern passed a law which scheduled to reduce the number of counties in this state significantly from 18 to 5. The parliamentary opposition as well as interest groups from the association of counties turned to the Constitutional Court claiming that this territorial reform would not be in accordance with the constitution. In July 2007 the Constitutional Court of the state Mecklenburg-Vorpommern turned the reform project down in a much discussed ruling.¹ The Court argued that a significant increase in the size of regions - especially in terms of area - has a negative impact on political participation and that this negative effect outweighs potential benefits from increased economic efficiency. Roughly speaking, the Court argued that larger counties discourage voting at the county level because people lose interest in county politics. In addition, the court claimed that increasing the geographical area of counties discourages citizens living in cities and towns more distant to the county seat to run for a seat in the county parliament because of the increase in the time costs of attending county parliament sessions as well as meetings of parliamentary commissions. The Court neither presented any empirical evidence nor quoted any academic studies on this issue. The present paper examines the empirical validity of the arguments put forward by the Court by studying the impact of the size of counties on political participation at the level of counties in Germany.

In the literature there are conflicting views on the impact of size² on political participation ranging from the "small-is-beautiful" to the "large-is-lively" interpretation. The most notable study on this subject is the monograph by Dahl and Tufte (1973). Despite the fact that the discussion in their study focuses on nation-states³, many arguments also apply to the level of cities, municipalities and regions. Discussing numerous claims and counterclaims with respect to the question whether smallness enhances or hampers the democratic process the authors conclude that neither theoretical reasoning nor the empirical data examined⁴ provide a definite answer. Balancing the advantages and disadvantages of smallness and bigness "*will favor a unit of one size for some purposes and a unit of a different size for other purposes. No single unit size will be optimal for every purpose. An emergent complex polity of interrelated unit will need units that change in size and scope as technology, communication, values, identification, and other factors alter the balance of gains and cost.*" (Dahl and Tufte, 1973, p. 28). Goldsmith and Rose (2002) arrive at similar conclusions in summarizing a series of papers on the relation between size and democracy. These authors note that there is no clear answer to the question "*whether size is indeed a critical factor as opposed to being merely a phenomenon that taps a relationship and serves as a surrogate measure for other critical considerations which serve to shape the nature of democracy*" (p. 791) .

In the empirical literature a lot of evidence on the relationship between size and political participation is presented. Oliver (1999) claims that city characteristics such as social composition, land usage etc. are of much greater importance in explaining democratic participation of citizens than city size. In a related paper, Oliver (2000) considers four

¹ Ruling of the Constitutional Court of the state Mecklenburg-Vorpommern, dated July, 26th. 2007, Az: LVerfG 9/06, LVerfG 10/06, LVerfG 11/06, LVerfG 12/06, LVerfG 13/06, LVerfG 14/06, LVerfG 15/06, LVerfG 16/06 und LVerfG 17/06.

² In virtually all of the literature size is measured in terms of population. In our empirical investigation presented below, we measure size both in terms of population as well as geographical area.

³ Some arguments, examples and pieces of empirical evidence also refer to the local government level but are confined to the level of municipalities and cities and not to regions such as counties.

⁴ It should be noted that the data examined by Dahl and Tufte (1973) referred to the 50ties and 60ties.

dimensions of civic involvement, contacting officials, attending community meetings, attending organizational meetings and participation in local elections and shows that size has a quite different effect upon each of these various measures of participation.⁵ Kelleher and Lowery (2004) provide some evidence that seems to indicate that smaller local governments encourage democratic participation at least as measured in terms of voter turnout. However, Larsen (2002) using Danish data, shows that larger municipalities are no less democratic than smaller ones. Using data on municipal elections in five European countries, Frandsen (2002) presents evidence that suggests that turnout is significantly higher in smaller cities and towns as compared to larger cities, with however marked differences across countries. The "small-is-beautiful-thesis" had already been challenged in a paper by Newton (1982). This author showed that larger communities are administratively more effective than smaller ones and with respect to democratic participation no significant differences between large and small local governments could be detected in the sample used.

In the US literature a quite significant focus is put on the importance of differences in institutional settings. Caren (2007) in an investigation of municipal elections in 332 mayoral elections showed that institutional settings and campaign factors explain a considerable part of turnover variation whereas demographic variables are not of that much importance. Rather similar results, stressing the importance of institutional settings too, are reported by Hajnal and Lewis (2003). Karnig and Walter (1983) examined whether reforms in governmental and electoral structure, such as the introduction of manager-council government at the local level, has contributed to the decline in voter turnout and reports evidence in favor of this hypothesis. Wood (2002) identified the timing of city elections as the most influential factor determining voter turnout in a random sample of U.S. cities. In addition the form of government seems to matter a lot. Cities with a "political" structure (elected mayors) have higher voter turnout than "administrative" cities with council-manager-governments, Denters (2002) examines the relation between the size of municipalities and the trust of citizens in local policy makers. The results from survey data on four European countries indicate that there is a modest negative effect of city size political trust.

This highly abridged discussion of empirical evidence indicates that the relation between size and democracy is still unresolved and that there are many intervening variables and mechanisms - ranging from institutions to cultural differences and the precise measurement of political participation - involved that determine this relationship.

Apart from an examination of the size-democracy-nexus our study also makes a contribution to the growing research among economists on the relation between economic variables and democracy. Thus for example Barro (1999) and Acemoglu et. al. (2005) study the relation between income and income distribution as well as educational attainment on democracy. In a related paper Glaeser, Ponzetto and Shleifer (2007) examine the relation between education and political participation and argue that education - and thus high wealth and income resulting out of high human capital accumulation - encourages political participation. However, in international comparative data sets this research gets at rather ambiguous results. Thus for example, Moretti and Oreopoulos (2004) in a study on voting in the US and the UK find a strong impact of educational attainment in the US but not in the UK. In our estimates presented below, indicator variables of human capital are included that turned out to have a surprisingly strong impact upon voter turnout.

⁵ For a much broader approach to the measurement and analysis of political participation see Rosenstone and Hansen (1993).

Our paper is going to add some further evidence on the issues discussed using data on Germany. Whereas the bulk of literature examines the relation between size and democracy using data on cities and municipalities we use data on regions, or to be more precise, on counties. In the US, counties do not have an executive as cities and municipalities and the institutional settings and importance of elections are quite different across counties within and across states. This seems to explain why US researchers are not that much interested in county elections and data on county elections also seem to be hard to collect in the US. In Germany and in many other European countries - as for example the regions in Denmark - counties have a quite significant administrative and political function and an executive as well as a local election system that is equivalent to that at the level of municipalities.

The paper is organized as follows. Section 2 presents background information about counties in Germany discussing both the importance of counties as a provider of public services as well as a short description of the electoral system at the county level. In addition we supply some comparative data on political participation at the level of counties. In the first subsection of section 3 we estimate the impact of size, demographics, educational attainment as well as numerous other variables on voter turnout at the county level. Here we present a comparative econometric analysis of voting behavior measured at the regional level for county, state and national parliament elections. A second subsection uses a data set collected by us on the number of candidates that apply for a mandate in county parliaments and presents an econometric examination of inter-county differences in active political participation. Finally, section 4 summarizes our results and discusses some conclusions.

2. The fiscal and political role of counties in Germany

Germany is a federal country and has a three stage administrative structure. On the top there is the federal government and there are 16 states, 3 of which (Bremen, Hamburg and Berlin) do in fact consist of one (big) city only and are called "city states" (Stadtstaaten). The other 13 states are "area states" (Flächenländer) which have plenty of local governments. The local government sector in each state is an integral part of the states to which they belong to but the Constitution guarantees the local governments to manage their own affairs.

The local government sector is also a multiple tier system, consisting of cities, municipalities and counties. Counties in Germany can be subdivided into two quite distinct types: Rural districts or rural counties (Landkreise) and urban districts or urban counties (Kreisfreie Städte). Whereas urban districts consist of one big city only (quite frequently with many smaller villages and towns in the urban fringe that are not independent), rural districts have numerous smaller cities, towns and villages. The rural districts are an intermediate administration level between the state and the numerous municipalities and each county has a county seat where the district parliament is located. In most states there is a four year election cycle at the county level and the timing of county elections is identical within states but different across states and county parliament elections are held concurrently with local elections in municipalities within states.⁶

Table 1 shows the structure of the local government sector in Germany in each state. The figures show that there is a marked heterogeneity. The average size (measured in terms of population) of urban counties varies from about 85,000 in Rheinland-Pfalz to about 322,000

⁶ It is sheer accident if local elections within states are concurrent with state parliament elections or national elections.

in Nordrhein-Westfalen and rural counties range from 92,000 inhabitants in Sachsen-Anhalt⁷ to 343,000 inhabitants in Nordrhein-Westfalen. There are also quite large differences in area across rural counties. The state Saarland has the smallest counties with an average area of about 430 km² whereas counties in Brandenburg have on average an area of more than 2,000 km². A map in the appendix shows the regional distribution of counties and provides an impression about the size heterogeneity of counties.⁸

Table 1: The structure of the local government sector at the state level in Germany¹

	urban counties		rural counties			
	number	average inhabitants 1,000	number	average inhabitants 1,000	average area km ²	number of incorporated municipalities
Germany (total)	111	181	322	171	1,053	12,336
West Germany	85	195	237	192	989	8,497
Schleswig-Holstein	4	153	11	202	1,387	1,125
Niedersachsen	8	126	37	158	1,194	1,194
Nordrhein-Westfalen	22	322	32	343	951	396
Hessen	5	276	21	225	972	426
Rheinland-Pfalz	12	85	24	127	783	2,306
Baden-Württemberg	9	218	35	251	984	1,111
Bayern	25	140	71	126	963	2,056
Saarland	0	-	5	143	429	52
East Germany	26	136	85	114	1,228	3,839
Brandenburg	4	98	14	155	2,058	420
Mecklenburg-Vorpommern	6	87	12	99	1,906	851
Sachsen	7	216	21	125	803	514
Sachsen-Anhalt	3	182	21	92	953	1,056
Thüringen	6	93	17	104	911	998

¹ All data refer to 2005. The three city states Bremen, Hamburg and Berlin are not reported because these states do not have a local government sector. The territorial reform in Sachsen-Anhalt in 2007 is not taken into account in the table. ² In Niedersachsen the Region Hannover is not included and in the state Saarland the Region Saarbrücken is excluded. Both regions have a special status and cannot be categorized as a rural or urban county. Source: Calculated from data supplied by the Federal Statistical Office, Wiesbaden, Germany.

Whereas in urban counties there is only one fiscal authority, the city government, in rural counties we have two layers of government, the city government and the local governments of the incorporated cities. The fiscal importance of rural counties is quite significant measured in terms of the share of total local government spending on the territory of the county that falls on county governments, see **table 2**. About 33% of all local government spending on the territory of rural counties⁹ is covered by counties whereas 67% falls on municipalities within counties. More than 50% of total county spending falls on welfare and social services. Here the most significant expenditure item is social assistance which are means-tested welfare

⁷ In 2007, the state Sachsen-Anhalt introduced a territorial reform reducing the number of counties from 24 to 14. Our data on Sachsen-Anhalt refers to the county structure before the 2007-reform because consistent data on the new counties is not yet available.

⁸ In the US there are about 3.140 counties with an average size of about 1,600 km², with however a wide range of variation.

⁹ Because urban counties consist of one city only, at the level of urban counties spending by cities and urban counties are as a matter of fact identical.

transfers.¹⁰ The table also reveals that there are marked differences in the distribution of tasks between counties and incorporated municipalities. Thus about 45% of spending on social welfare and schools within the territory of counties falls on county governments and about 40% of expenditures on public order and environmental protection is covered by county governments. Health and recreation, which accounts however for less than 3% of county spending, is almost exclusively the responsibility of county governments. However, this distribution of tasks between county governments and incorporated municipalities varies across states and also depends within and across states upon the size of incorporated municipalities. In many states, larger incorporated municipalities are responsible for the provision of school infrastructures and the provision of social assistance welfare transfers on their territory.

Table 2: Spending by rural counties in Germany by function in 2004

	county expenditures as a share of total local public expenditures at the county level	share of spending of total county spending
general administration	23.5%	8.0%
public order, environmental protection, etc.	40.3%	6.1%
school infrastructure ¹	46.3%	14.5%
cultural activities	20.8%	1.8%
social welfare and social services	45.5%	51.1%
Health and recreation ²	79.7%	2.4%
streets, public transport	16.9%	6.4%
community services	21.7%	7.9%
public enterprises	12.6%	1.9%
total ³	33.4%	100%

¹ In Germany, local governments are responsible for the provision of school infrastructures whereas state governments are responsible for school staffs. The only exception is Bayern where large cities (city counties) also employ teachers. ² Excluding hospitals. ³ Excluding intergovernmental transfers.

Source: Calculated from data supplied by the Federal Statistical Office, Wiesbaden, Germany.

Counties in Germany do not have the power to levy taxes and thus completely depend on financing from state governments and municipalities and towns within the territory of the county. County parliaments fix a percentage rate of tax and transfer revenues of municipalities and towns within the territory of the county that has to be paid to the county (Kreisumlage). More than 80% of county revenues are transfers from state governments and incorporated municipalities, whereas incorporated municipalities get more than 40% of their revenues out of local property taxes and local business taxes.

Despite the heterogeneity in population size and area and despite the fact that the division of tasks between rural counties and incorporated municipalities differ to some extent across and within states differences in responsibilities, authority, etc. are rather limited across the German states and also county election procedures are quite similar. Thus for example in most states - except Baden-Württemberg and Brandenburg¹¹ - county mayors are elected directly and not by the county parliament and by federal law EU foreigners have been granted the

¹⁰ In 2005 a far-reaching reform of the welfare system in Germany took place shifting general welfare transfers to the federal government level and support of housing to the local level. However, this reform did not change significantly the fiscal importance of counties.

¹¹ The state Brandenburg is just about in changing the election law to direct election of the county mayor.

right to vote in all local elections. If we compare the institutional structure of counties in Germany both within as well across states, institutional differences are much smaller than those in the US¹² and to the best of our knowledge this also applies to other European countries.¹³ Consequently the issue of institutional heterogeneity that is the focus of many US contributions to research on local elections is not a big issue in our study. Institutional differences across states can in our study be taken into account by introducing state fixed effects in our estimates. In addition, because we confine our empirical study to the most recent local elections in each state, changes in institutions do not matter.

The political process at the county level is rarely an issue of research and we are not aware of any academic publication - neither for Germany nor the US - with a focus on political participation at the county level. As compared to local elections at the level of cities and municipalities an examination of political participation at the county level leaves us with a manageable data set - there are more than 12,000 municipalities in Germany - and at the county level a plenty of easily available information is available from which a wide set of control variables can be constructed that can be taken into account in an empirical study.

Table 3: Voter turnout at the county level in county, state and federal elections in the period 2002 - 2006 (figures in parenthesis are coefficients of variation)

	county elections	state parliament elections	federal parliament elections	N ¹
rural counties in West Germany	58.9% (12,8%)	60.9% (9,3%)	79.1% (2,9%)	235
rural counties in East Germany	48.0% (10,1%)	55.7% (15,7%)	73.8% (3,9%)	86
urban counties in West Germany	49.4% (10,9%)	56.6% (10,6%)	75.4% (3,8%)	86
urban counties in East Germany	40.2% (10,7%)	57.6% (15,3%)	73.1% (3,4%)	26

¹ Number of counties.

Source: Calculated from data supplied by the Federal Statistical Office, Wiesbaden, Germany. See appendix for a precise list of the various elections taken into account in the table.

Before we turn to our econometric analysis we briefly report some fundamental descriptive data on political participation at the county level. In **table 3** we present voter turnout at the county level for county, state and federal elections that took place in the period 2002 - 2006.¹⁴ We also supply information about the coefficient of variation¹⁵ which gives an impression about the heterogeneity of turnover. In one state the date of state parliament elections was concurrent with federal elections and in one state, county elections were held two weeks after state parliament elections. Suppressing these two elections does not significantly affect the summary statistics reported in table 3.

Some interesting features can be derived by the statistics provided in table 3:

i) County election turnover in West Germany is about 9% to 10% above the East German figures. At state and federal parliament elections East-West differences can only be observed

¹² For a discussion of counties in the U.S. see DeSantis and Renner (1993).

¹³ There is no voter registration in Germany as in all other European countries.

¹⁴ In each state the most recent county and state elections have are used for our estimation, see the details provided in the appendix.

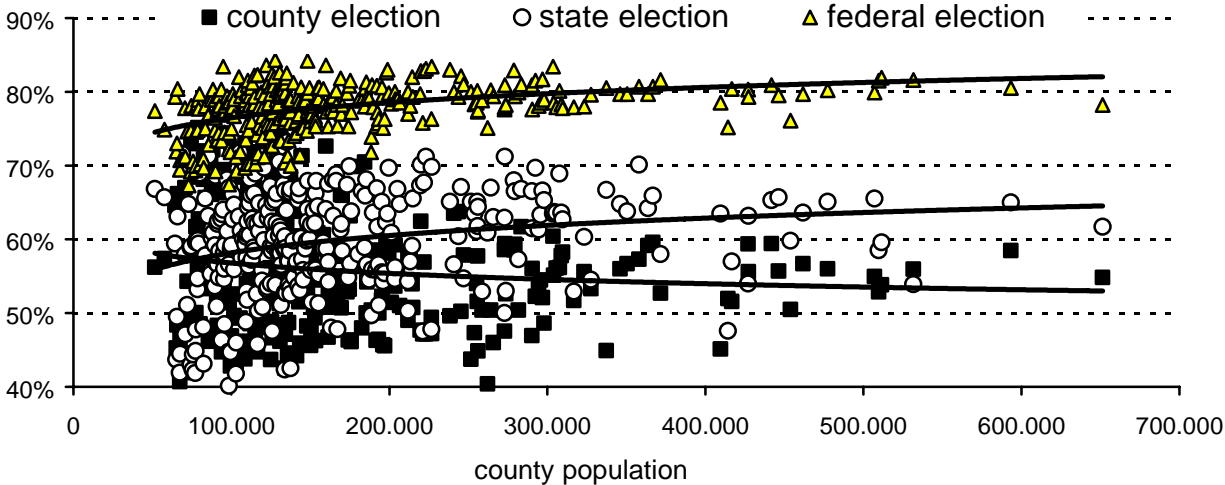
¹⁵ The coefficient is defined by the ratio of the standard deviation and the mean value.

at the level of rural counties whereas voter turnout in urban counties is not significantly different between East and West Germany.

ii) Turnover at federal elections is much higher than at state elections and state election turnover is significantly higher than turnover at county elections.¹⁶

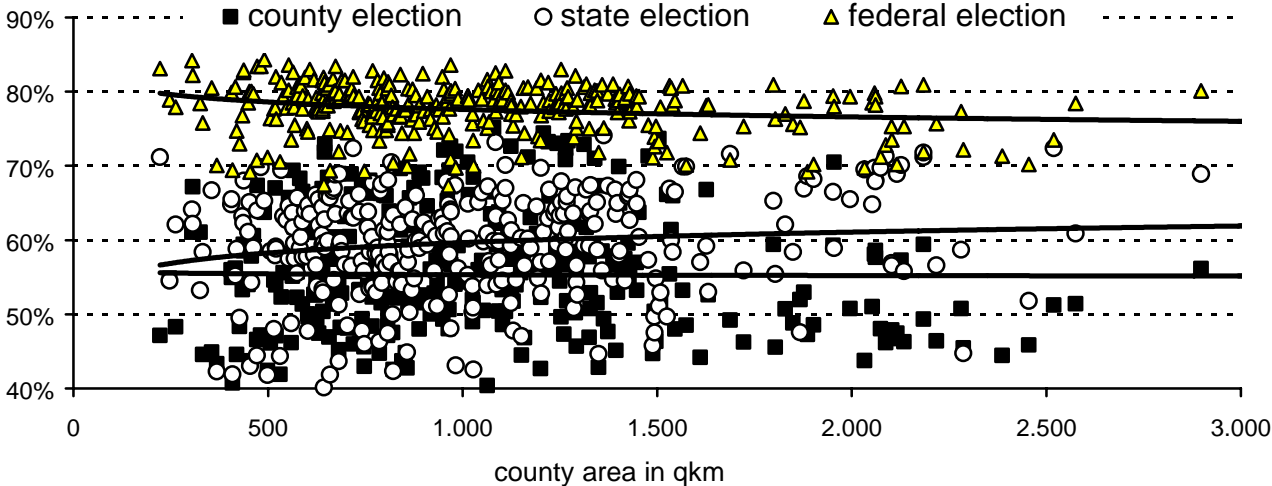
iii) Another interesting feature is the fact that variation in turnout, as measured by the coefficient of variation, is rather similar and quite strong at county and state parliament elections, whereas at federal elections the coefficient of variation is much lower.

Figure 1: Voter turnout at the county level (rural counties only) and population size



Source: Calculated from data supplied by the Federal Statistical Office, Wiesbaden.

Figure 2: Voter turnout at the county level (rural counties only) and county area in sqkm



Source: Calculated from data supplied by the Federal Statistical Office, Wiesbaden.

Thus there seems to be a marked "hierarchy" of elections: Voter turnout at federal elections is between 15% and 20% higher than at state elections and the very small coefficient of variation suggests that people are interested in federal elections regardless of where they live. Thus the data provided in table 3 suggests that voters in Germany are interested in big policy issues, but do have a much lower interest in politics at the state level and do not care that much for

¹⁶ The only exception are the rural counties in West Germany because voter turnout at county elections is not that much different from turnover in state parliament elections.

local policy issues. However, one has to consider that federal elections are much more present in the media and election campaigns for federal elections start at least half a year before election day and one should expect that this has a quite strong effect upon voter mobilization.

In **figure 1** and **figure 2** we present scatter plots on the relation between the size of counties - measured in terms of population and area - and voter turnout for all rural counties because this is the correlation we are most interested in. The simple linear regressions - using the size variable in log form as right hand variable - indicate modest associations between the size of counties and turnover. Voter turnout seems to be positively related to turnover at state and federal elections whereas a negative correlation emerges for county elections. The correlations appears even more loose if we use area as the size variable. However, this simple descriptive analysis should not be over-interpreted because no control variables are taken into account.

Table 4: Spearman's rank correlation coefficient for voter turnout at county, state and federal elections

	$\rho(C, S)^2$	$\rho(C, F)^2$	$\rho(S, F)^2$	N ¹
West German rural counties	-0.216 (0.001)	0.091 (0.162)	0.456 (0.000)	235
West German urban counties	0.026 (0.814)	0.130 (0.232)	0.821 (0.000)	86
East German rural counties	0.466 (0.000)	0.574 (0.000)	0.403 (0.000)	86
East German urban counties	-0.083 (0.685)	0.404 (0.041)	-0.012 (0.955)	26

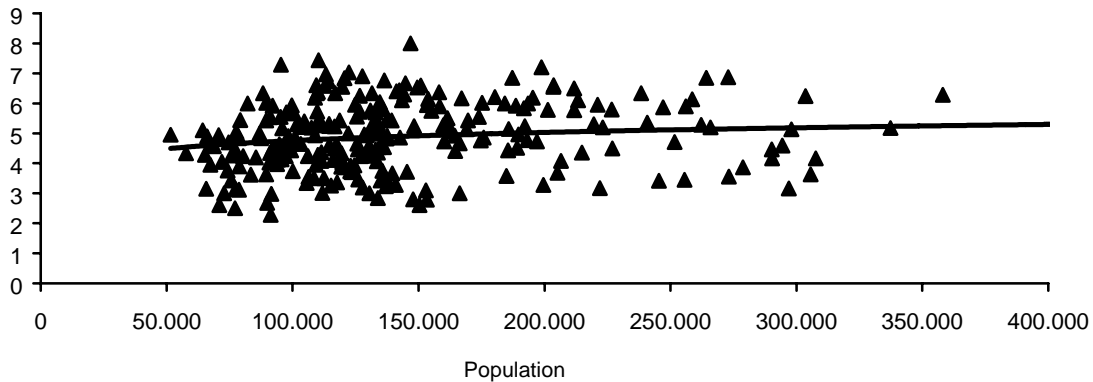
¹ Number of counties.

² $\rho(C, S)$ spearman's rank correlation coefficient between voter turnout at county and state elections. $\rho(C, F)$ is the correlation between voter turnout for county and federal elections and $\rho(S, F)$ for state and federal elections. Figures in parenthesis are levels of significance.

In **table 4** we examine the question whether counties that have a high/low turnover at county elections also have a high/low turnover at state or federal elections and vice versa by presenting Spearman's rank correlation coefficients. Counties that have a high voter turnout at state elections also tend to have a high voter turnout at federal elections and vice versa. However, high/low turnover at county elections does not coincide that strongly with a high/low turnover at state and federal elections and for county and state elections in West German rural counties we even get a negative correlation. These results suggest that turnover at local elections is determined by other variables than turnover at state and federal elections.

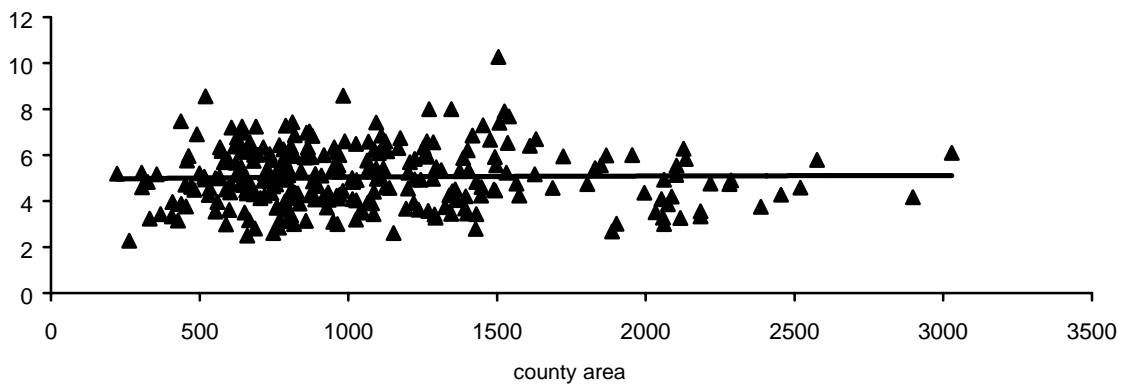
We next look at our second variable of interest namely the number of candidates that run for a seat in the county parliament. In most states, this information is not provided by official statistics and most of the data was collected by us via running an e-mail survey. On the average, there are 5.05 candidates per seat in the county parliament in the 275 rural counties that responded to our survey with usable answers. In the 72 responding urban counties, the corresponding ratio is about 5.47 candidates per seat. As **figure 3** and **figure 4** reveal there is no visible correlation between county size - measured both in terms of population and area - and the relative number of candidates.

Figure 3: Number of candidates per county parliament seat in rural counties in Germany and number of county inhabitants



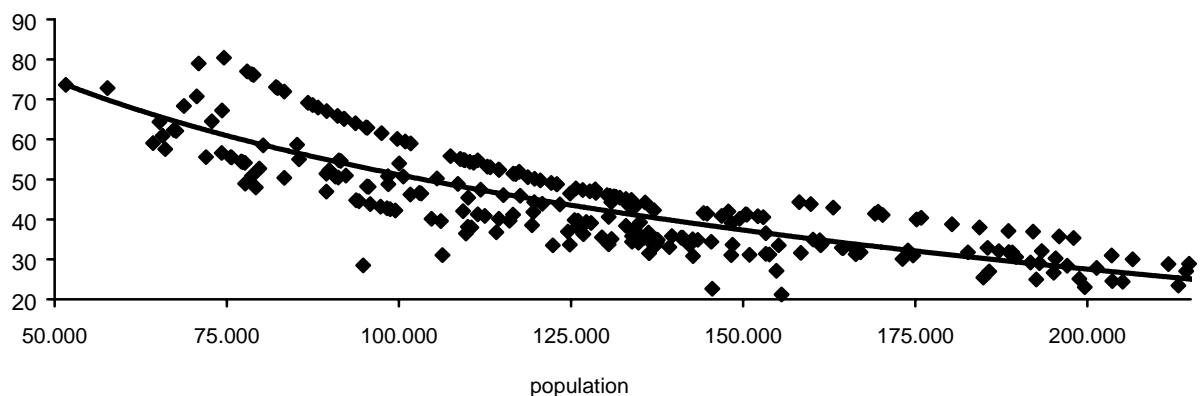
Note: 4 counties with more than 400.000 inhabitants are suppressed in the chart.
Source: Authors calculations.

Figure 4: Number of candidates per county parliament seat in rural counties in Germany and county area in sqkm



Source: Authors calculations.

Figure 5: Number of county parliament seats per 100,000 inhabitants in rural counties in Germany and county population



Source: Calculations by the author.

In figure 3 and 4 we normalized the number of candidates that run for a county parliament seat by the number of county parliament seats in each county and not by county population or the number of eligible voters. The reason for this is the fact that we observe marked "political

economies of scale" in the size of county parliaments, see **figure 5**. Smaller counties have smaller county parliaments but in relation to the population size the relative size of county parliaments in the smallest counties is three times larger than in the largest rural counties. A similar relation holds for urban counties. As a matter of course this is no behavioral relation because the number of county parliament seats is fixed by state laws and in each state there is an implicit formula that increases the size of county parliaments under proportionally to the county population. However, occasionally it happens that there are extra seats in county parliaments if the number of party members directly voted into the county parliament exceeds the number of seats the party is entitled to according to the share of votes (Überhangmandate). However, this effect is usually rather small.

Summarizing our descriptive evidence we conclude that counties in Germany are - contrary to the US - of quite significant importance with respect to the provision of local/regional public services and counties constitute an important element in local politics. However, in accordance with evidence presented in the literature on local, state and federal election turnover, we observe a marked lower voter turnout at the county level. First simple descriptive evidence seems to suggest that the size of regions is not an important determinant of voter turnout and we also observe that there seems to be no significant size effect on the willingness of people to run for a seat in county parliaments. However, we have to check whether these conclusions hold if we control for other variables in econometric estimates. In addition, we presented evidence of strong institutional determined economies of scale in the political representation process because in relative terms small regions have larger parliaments.

3. Empirical evidence on political participation at the county level

This section presents estimates of political participation at the county level using both turnover data as well as data on the number of candidates that run for office in county parliament elections. Voter turnout at the county level is estimated for county, state and federal elections in order to be able to detect differences in behavior. In addition, we inspect differences between West and East Germany as well as between rural and urban counties.

3.1 Empirical Evidence I: Voter turnout at the county level

We follow the empirical literature and formulate a linear regression model to examine the determinants of voter turnout by setting up the following specification:

$$TV_{j,k} = a_1 \ln(\text{AREA}_{j,k}) + a_2 \ln(\text{POP}_{j,k}) + b_1 \text{POP1825}_{j,k} + b_2 \text{POP2535}_{j,k} + b_3 \text{POP3565}_{j,k} + b_4 \text{POP65}_{j,k} + c_1 \ln(\text{INCOME}_{j,k}) + c_2 \text{FOREIGN}_{j,k} + c_3 \text{SOCIAL}_{j,k} + c_4 \text{EDUH}_{j,k} + c_5 \text{EDUL}_{j,k} + c_6 \ln(\text{DEBT}_{j,k}) + c_7 \text{SHARE}_{j,k} + c_9 \text{MIGRATE}_{j,k} + c_{10} \text{UR}_{j,k} + d_0 + \sum_k d_{1,k} D_{j,k} + \sum_t d_{2,t} \text{TIME}_{j,t} + u_{j,k}$$

The index j denotes the county and the index k indicates the state to which the county belongs to. The dependent variable is voter turnout which is defined by:

TV	Turnover (number of votes/number of eligible voters)
	Turnover is measured for county, state and federal parliament elections

TV is measured for the most recent elections and the appendix provides details of the elections taken into account in our empirical study. The key variables in which we are interested in are the two size-variables

AREA area in km² and
POP population in 2004.

In the regression on city counties the AREA variable is suppressed. Note that we use population rather than the number of eligible voters. Because both variables are highly correlated none of the results reported below changes significantly if we substitute population by the number of eligible voters.

In addition we use three other groups of exogenous variables. The first group of exogenous variables covers information about the age structure of the population at the county level:

P1825 population aged 18-25 as a share of total population 18+ (2004)
P2535 population aged 25-35 as a share of total population 18+ (2004)
P5065 population aged 50-65 as a share of total population 18+ (2004)
P65+ share of population aged 65+ as a share of total population 18+ (2004).

The second group of exogenous variables captures socio-economic characteristics of counties and includes the following variables:

INCOME per capita disposable income (2004)
FOREIGN share of non-Germans
SOCIAL number of recipients of social assistance per 1,000 inhabitants
EDUH share of employees with a university degree (measured at the place
of residence)
EDUL share of employees without professional education (measured at the
place of residence)
UR unemployment rate (June 2005)
DEBT per capita debt of county governments (used only in regression on
county elections)
SHARE Government consumption spending by county governments as a
share of total government consumption spending by county
governments and incorporated municipalities (average for the period
2002-2004). Government consumption is defined as labor compensation
plus purchases of materials and services.
MIGRATE percent of the German population that migrated in and out of the county
in 2004

The variables SHARE and DEBT refer to the fiscal stance of county governments and both variables are suppressed in the turnover regressions for state and national parliament elections. In addition SHARE does not make sense in city county regressions and has to be deleted from the set of exogenous variables in the estimates of county election turnover in city counties.

Finally, we added dummy variables for each state and for the election year in our regression estimates to control for unobserved heterogeneity:

$D_{j,k}$: state dummies, $D_{j,k} = 1$ if county j belongs to state k , 0 otherwise.

TIME dummies: we use dummies for each year in which elections were held. In the county regression there are 3 time dummies (2002, 2003 and 2004) and in the state regression there are 4 time dummies (2002, 2003, 2004 and 2005).

Because we use dummies for each state, no dummy variable to control for East-West-German differences is used.

Let us briefly discuss the various variables. As we already discussed in the introduction section, empirical research presents rather mixed evidence on the impact of size on turnover and thus the parameters α_1 and α_2 can be used to test the validity of the "small-is-beautiful" vs. the "large-is-lively" hypothesis. Results from psephology suggest that younger people participate less in voting and thus one might expect that b_1 and b_2 are negative whereas b_3 and b_4 have a positive sign. Evidence presented in the literature provides rather mixed evidence with respect of the impact of the various socio-economic variables on voter turnout and thus no clear a-priori expectations can be formed with respect to the sign of the corresponding parameters. For county elections, one should expect that the variable MIGRATE has a negative impact on turnover because one should assume that the higher the mobility of the county population the smaller are the ties with local politics and local policy makers. Higher public debt (DEBT) as well as a higher share of county spending (SHARE) is expected to have a positive impact on county election turnover because the importance of counties as a provider of public services increases and higher public debt of counties should indicate that the fiscal stance of counties might contribute to the public discussion about politics at the county level. The evidence reported in some of the paper quoted in the introductory section, suggest that the two educational attainment variables, EDUH and EDUL, do affect political participation. Thus we expect a positive sign on the EDUH variable whereas EDUL is expected to have a negative impact on voter turnout. The state dummies, D, capture institutional differences in county electoral laws across states and the election TIME dummies control for general political events and attitudes at the date of election.

We estimate the turnover regression model for three types of elections at the county level: County parliament elections, which are our main focus of interest, and as control, we also run this regression on state and federal elections, using identical specifications, with the exception of the variables DEBT and SHARE, which do not make sense in the state and federal election regressions. Thus we can study the question, whether regional and state and federal elections are different. In addition, we present estimates separately for urban and rural counties as well as for West and East Germany.

In **table 5** we present our estimation results comparing estimates for voter turnout for county, state and federal elections for the various regional data sets. No estimates are presented for the East German urban counties because there are only 26 observations which does not leave sufficient degrees of freedom for estimation.

Table 5a: Voter turnout estimates: All German rural counties¹ (N = 321 observations)

	county elections		state elections		federal elections	
	parameter	t-ratio	parameter	t-ratio	parameter	t-ratio
AREA	0.0138	2.08	0.0065	1.24	-0.0017	0.58
POP	-0.0154	1.88	-0.0164	2.69	0.0019	0.57
P1825	0.1612	0.29	0.4066	0.92	0.1700	0.69
P2535	0.1736	0.38	0.2543	0.71	-0.4688	2.33
P5065	0.1196	0.28	-0.2252	0.73	-0.3384	1.96
P65	0.0616	0.32	0.2601	1.70	-0.0914	1.07
INCOME	-0.0561	1.52	0.0624	2.13	0.0576	3.51
FOREIGN	-0.0073	5.39	-0.0019	1.77	-0.0007	1.17
SOCIAL	-0.0007	1.85	-0.0006	2.05	-0.0004	2.43
EDUH	0.2986	1.96	0.5634	4.67	0.2232	3.30
EDUL	0.0404	0.32	-0.3716	3.76	-0.3829	6.90
UR	-0.0013	-1.08	-0.0018	1.96	-0.0015	2.94
DEBT	-0.0025	1.08	-	-	-	-
SHARE	0.0501	1.03	-	-	-	-
MIGRATE	-0.1153	-1.27	-0.1148	1.62	-0.0055	0.14
R ² adj.	0.86		0.87		0.83	
F(age)	0.99		0.11		0.09	
F(edu)	0.12		0.00		0.00	

Let us first inspect our key variables namely the impact of population and geographic size on turnout. All size variables are virtually insignificant in regressions on voter turnout at the level of city counties, whereas we get rather mixed results for rural counties. For West German rural counties we estimate a negative impact of population size on voter turnout at county and state elections. However, the estimated parameter is at the margin of 5%-significance. In East Germany, population size is insignificant whereas there is a positive effect of geographic size on voter turnout, which is however only weakly significant for federal elections. Thus at the county level there is a rather ambiguous effect of size on voter turnout which is much more pronounced for county elections, not systematic for state elections and not existing at all for federal elections.

If we take our estimation results at face value, doubling the population size of West German counties would reduce turnout at county elections by about 1.1% and a doubling of the county area increases participation by about 0.6%. An amalgamation policy that halves the number of rural counties - which means that the average size of counties both in terms of population and area doubles - reduces participation by about 0.5%. Thus the quantitative effects of size on turnout is of only marginal importance. In East Germany, the same fictitious experiment would result in an increase in turnout at county elections by about 2%. As a matter of course, we are well aware of the fictitious character of our calculations because changing the territorial structure might affect other variables that determine turnout not taken into account explicitly in our estimate. However, our comparative static experiment can be used as a rough benchmark for an evaluation of the potential effects of territorial reforms on voter turnout. We made similar calculations for state elections deriving even smaller effects on turnout. From these estimates we can conclude that there is no empirical base for the

ruling of the Constitutional Court in the state Mecklenburg-Vorpommern that ruled down a territorial reform of counties in the state Mecklenburg-Vorpommern for fear of a strong negative impact on voter turnout.

Table 5b: Voter turnout estimates: West German rural counties¹ (N = 235 observations)

	county elections		state elections		federal elections	
	parameter	t-ratio	parameter	t-ratio	parameter	t-ratio
AREA	0.0088	1.15	0.0076	1.12	-0.0016	0.43
POP	-0.0162	1.93	-0.0151	2.14	0.0024	0.61
P1825	-0.4388	0.71	-0.2773	0.51	-0.0238	0.08
P2535	-0.2042	0.40	-0.4879	1.08	-0.9014	3.56
P5065	-0.4651	1.00	-1.0823	2.66	-0.7732	3.38
P65	-0.1335	-0.58	-0.0347	0.17	-0.2207	1.92
INCOME	-0.0702	1.89	0.0727	2.21	0.0622	3.36
FOREIGN	-0.0064	-4.59	-0.0006	0.51	0.0000	0.05
SOCIAL	-0.0012	2.81	-0.0007	2.00	-0.0005	2.20
EDUH	0.2416	1.58	0.5223	3.85	0.2084	2.73
EDUL	-0.0254	0.20	-0.4032	3.62	-0.4129	6.59
UR	0.0007	0.36	0.0001	0.08	-0.0006	0.69
DEBT	-0.0017	0.71	-	-	-	-
SHARE	0.0494	0.98	-	-	-	-
MIGRATE	-0.1104	1.28	-0.0942	1.25	-0.0046	0.11
R ² adj.	0.85		0.80		0.61	
F(age)	0.89		0.05		0.05	
F(edu)	0.16		0.00		0.00	

Let us next examine the effects of the other variables taken into account in our estimate. At the bottom of each table we provide F-Statistics with respect to the age structure variables P1825, P2535, P5065 and P65+ testing the joint impact of these variables on voter turnout by examining the hypothesis $b_1 = b_2 = b_3 = b_4 = 0$. Here too, we get rather mixed results. For city counties no significant impact of the age structure of the population can be found. The same holds true for county elections in rural counties. However, we find - at least weakly - significant age structure effects in rural counties for state and federal elections.

The two fiscal variables that capture the fiscal stance of counties, DEBT and SHARE, do not turn up with significant parameter estimates in the county election regression. The INCOME variable is insignificant in all regressions using city counties, and the same holds true for the variables SOCIAL, MIGRATE, FOREIGN and UR with rare exceptions only. For rural areas we once again get a rather mixed picture. In East Germany at the level of rural counties we get a negative effect of the share of non Germans on voter turnout for all elections whereas in West Germany a similar effect can only be detected for county elections. A higher fraction of welfare recipients (social assistance welfare payments) has a depressing effect on voter turnout in rural counties in West Germany but not in East Germany. A higher unemployment rate reduces in most cases the estimated voter turnout at state and federal elections but leaves participation at county elections unaffected. Finally, the MIGRATE variable does not show any significance in determining turnover.

Table 5c: Voter turnout estimates: East German rural counties¹ (N = 86 observations)

	county elections		state elections		federal elections	
	parameter	t-ratio	parameter	t-ratio	parameter	t-ratio
AREA	0.0377	2.18	0.0255	2.61	0.0105	1.87
POP	0.0108	0.40	-0.0217	1.49	-0.0015	0.18
P1825	4.9765	3.20	2.4342	2.67	0.9778	1.87
P2535	1.8868	1.44	2.4989	3.27	1.0232	2.33
P5065	2.3730	2.58	1.1926	2.20	0.5906	1.90
P65	1.4819	1.92	1.5192	3.37	0.5501	2.13
INCOME	0.5313	2.05	0.0009	0.01	0.0997	1.24
FOREIGN	-0.0265	2.42	-0.0177	2.77	-0.0065	1.76
SOCIAL	0.0012	1.31	-0.0002	0.40	-0.0003	0.91
EDUH	0.8350	1.73	0.8895	3.21	0.3324	2.09
EDUL	0.6359	1.11	-0.2027	0.60	-0.2730	1.41
UR	-0.0004	0.16	-0.0028	2.13	-0.0012	1.55
DEBT	0.0058	0.72	-	-	-	-
SHARE	-0.0222	0.18	-	-	-	-
MIGRATE	0.6634	0.63	0.7549	1.23	0.5909	1.68
R ² adj.	0.45		0.94		0.82	
F(age)	0.09		0.00		0.01	
F(edu)	0.20		0.00		0.00	

The most stable effect we discover for our human capital/education variables. For county elections we find a consistent and at least weakly significant impact of a higher share of highly educated people on voter turnout, whereas there is no impact of EDUL. The effects of the EDUH variable increase strongly in significance for state parliament elections and in West German rural counties we even estimate a strong negative impact of EDUL. The same holds true for federal elections. To test the overall significance of educational attainment table 5 presents an F-Test of the joint significance of the human capital variables testing the hypothesis $c_6 = c_7 = 0$. This hypothesis is strongly rejected in the state and federal parliament elections and thus there is a highly significant impact of educational attainment on voter turnout. However, for local elections human capital does not turn out to be a significant determinant of voter turnout. The impact of our education variable on voter participation on turnover at state and federal elections is also remarkable strong. If the share of human-capital intensive labor doubles, voter turnout at the state level would increase in the West German rural counties by about 5.6% and in urban counties by almost 3%. For federal elections, which already have a high turnover, the effects are smaller.¹⁷

¹⁷ This simple comparative static experiment implicitly assumes that the increase in the share of highly educated workers goes at the expense of the reference group (workers having neither a low nor high educational attainment).

Table 5d: Voter turnout estimates: German urban counties¹ (N = 112 observations)

	county elections		state elections		federal elections	
	parameter	t-ratio	parameter	t-ratio	parameter	t-ratio
AREA	-	-	-	-	-	-
POP	-0.0104	1.06	0.0008	0.12	0.0037	0.77
P1825	-1.0279	2.09	-0.0605	0.17	-0.0647	0.27
P2535	0.3997	0.57	-0.0420	0.10	-0.4742	1.55
P5065	-0.3621	0.57	-0.2504	0.56	-0.2995	0.96
P65	0.0893	0.25	0.2911	1.14	-0.0703	-0.40
INCOME	0.0133	0.20	0.0467	0.99	0.0239	0.73
FOREIGN	-0.0026	1.55	-0.0001	0.10	0.0001	0.16
SOCIAL	-0.0004	1.12	-0.0001	0.15	-0.0001	0.66
EDUH	0.5064	2.90	0.4313	3.46	0.2925	3.38
EDUL	0.0455	0.18	-0.1127	0.62	-0.1632	1.31
UR	0.0012	0.65	-0.0037	2.80	-0.0020	2.15
DEBT	-0.0040	0.48	-	-	-	-
SHARE	-	-	-	-	-	-
MIGRATE	-0.2926	0.62	0.0125	0.04	0.1255	0.55
R ² adj.	0.73		0.87		0.68	
F(age)	0.20		0.50		0.54	
F(edu)	0.01		0.00		0.00	

Let us summarize the results: The size of regions affects voter turnout especially for local elections whereas the size impact on state and federal elections is not significant. For county elections in most cases we get a negative impact of population size whereas there is a tendency towards a positive size impact for the geographic size of regions. However, our benchmark calculations revealed that the quantitative impact of the size of regions on voter turnout is rather modest. In addition it is surprising that the age structure of the population is of importance only for state and national parliament elections but no significant impact can be discovered for county elections. The variable showing the most consistent and quantitative also important impact is the educational attainment of the electorate, measured by the share employees in relation to the total active workforce with high and low human capital.

Table 5e: Voter turnout estimates: West German urban counties¹ (N = 86 observations)

	county elections		state elections		federal elections	
	parameter	t-ratio	parameter	t-ratio	parameter	t-ratio
AREA	-	-	-	-	-	-
POP	-0.0194	1.79	0.0025	0.29	0.0027	0.44
P1825	-0.9382	1.71	-0.0234	0.05	0.1663	0.54
P2535	-0.0532	0.09	-0.4485	0.90	-0.6227	1.80
P5065	-1.3073	1.90	-0.3551	0.64	-0.2500	0.65
P65	-0.1867	0.49	0.0702	0.23	-0.0981	0.46
INCOME	0.0650	1.03	0.0753	1.49	0.0451	1.29
FOREIGN	-0.0014	0.85	0.0001	0.11	0.0005	0.55
SOCIAL	-0.0006	1.49	-0.0003	0.90	-0.0003	1.24
EDUH	0.4943	2.85	0.4303	3.07	0.3349	3.45
EDUL	-0.2043	0.86	-0.1604	0.84	-0.2107	1.59
UR	0.0035	1.67	-0.0021	1.26	-0.0011	0.90
DEBT	0.0025	0.32	-	-	-	-
SHARE	-	-	-	-	-	-
MIGRATE	-0.8684	1.86	-0.0623	0.17	-0.0312	0.12
R ² adj.	0.69		0.84		0.66	
F(age)	0.24		0.70		0.34	
F(edu)	0.00		0.00		0.00	

¹ Parameters of state and election year fixed effects are not reported. R² adj. denotes the adjusted R². F(age) denotes the F-Statistic for the hypotheses that all age structure parameters are jointly zero $b_1 = b_2 = b_3 = b_4 = 0$. F(edu) denotes the F-Statistic for the hypothesis that the parameters of the education variables are jointly zero, $c_6 = c_7 = 0$.

3.2 Empirical Evidence II: Active civic participation in county elections

Next we examine the effect of the size of regions on active political participation measured in terms of the willingness of people to run for a mandate in the county parliament. Here we use an empirical model that has a specification that is virtually identical to model used for estimating voter turnout. However, the endogenous variable is the number of candidates per county parliament seat, CS:

$$\ln(\text{CS}_{j,k}) = a_1 \ln(\text{AREA}_{j,k}) + a_2 \ln(\text{POP}_{j,k}) + b_1 \text{POP1825}_{j,k} + b_2 \text{POP2535}_{j,k} + b_3 \text{POP3565}_{j,k} + b_4 \text{POP65}_{j,k} + c_1 \ln(\text{INCOME}_{j,k}) + c_2 \text{FOREIGN}_{j,k} + c_3 \text{SOCIAL}_{j,k} + c_4 \text{EDUH}_{j,k} + c_5 \text{EDUL}_{j,k} + c_6 \ln(\text{DEBT}_{j,k}) + c_7 \text{SHARE}_{j,k} + c_9 \text{MIGRATE}_{j,k} + c_{10} \text{UR}_{j,k} + d_0 + \sum_k d_{1,k} D_{j,k} + \sum_t d_{2,t} \text{TIME}_{j,t} + u_{j,k}$$

CS Number of candidates that run for a seat in the county parliament divided by the number of seats in the county parliament

A straightforward transmission of the "small-is-beautiful" and the "large-is-lively" hypothesis to this measure of political participation yields the expectation that α_1 and α_2 are positive in the first and negative in the second case. In addition, one should also expect that if there are positive effects of education of voter turnout, there should also be a similar effect on active

political participation. However there can also be contradicting effects because individuals with more human capital face higher opportunity cost and a more narrow time budget because higher qualified activities are correlated with both higher income as well as a larger number of working hours per week.

Table 6: Number of candidates that run for a mandate in county parliaments per county seat available¹

	rural counties						city counties	
	Germany		West Germany		East Germany		Germany	
	parameter	t-ratio	parameter	t-ratio	parameter	t-ratio	parameter	t-ratio
AREA	0,0673	1,81	0,0390	0,80	0,1143	1,31	-	-
POP	0,0894	1,98	0,1075	2,10	0,1165	0,83	0.1934	2.68
P1825	0,275	0,09	-1,9679	0,53	7,6734	0,96	5.3037	1.52
P2535	5,0268	1,96	6,2382	1,97	2,6058	0,40	0.0728	0.02
P5065	2,5417	1,15	1,2917	0,46	7,5023	1,48	0.3327	0.06
P65	0,9724	0,89	1,4950	1,05	0,3259	0,08	1.9675	0.75
INCOME	-0,1786	0,86	-0,2061	0,90	0,8288	0,64	-0.0550	0.11
FOREIGN	-0,0111	1,47	-0,0144	1,65	-0,0066	0,11	0.0018	0.14
SOCIAL	0,0033	1,51	0,0034	1,23	0,0044	0,94	0.0009	0.29
EDUH	1,8191	2,14	1,8603	2,02	1,6652	0,58	0.1564	0.10
EDUL	0,7761	1,10	0,8797	1,11	0,4053	0,14	2.2210	1.12
UR	-0,0028	0,46	-0,0049	0,45	-0,0022	0,19	-0.0336	2.44
DEBT	0,0203	1,48	0,0164	1,08	0,0624	1,46	-0.0028	0.05
SHARE	0,0595	0,22	0,0598	0,19	0,0697	0,11	-	-
MIGRATE	0,4532	0,95	0,4610	0,91	-0,6867	0,13	4.2021	1.03
N	275		199		76		72	
R ² adj.	0,62		0,51		0,40		0.68	
F(age)	0,39		0,37		0,53		0.77	
F(edu)	0,10		0,13		0,84		0.46	

¹ Parameters of state and election year fixed effects are not reported. R² adj. denotes the adusted R². F(age) denotes the F-Statistic for the hypotheses that all age structure parameters are jointly zero $b_1=b_2=b_3=b_4=0$. F(edu) denotes the F-Statistic for the hypothesis that the parameters of the education variables are jointly zero, $c_6=c_7=0$.

The estimation results are reported in **table 6**. In the regressions using all the full sample as well as the subsample of West German rural counties the population variable has a positive impact on the willingness of people to run for a county parliament seat. However, the significance is at the margin. In East Germany no significant size effect can be identified at all! The geographical size does not yield a statistical significant effect on the number of candidates that run for a mandate in a county parliament in relation to the number of seats in county parliaments. For city counties¹⁸ we find a highly significant positive impact of the size of cities on active participation of citizens in city parliament elections. Thus the estimates reported in table 6 give considerable support to the "large-is-lively" hypothesis with respect to active political participation.

¹⁸ There are no sufficient degrees of freedom to allow a separation of West and East German city counties.

Table 6 also reports F-statistics for the joint test of significance of the age structure and the educational attainment variables. The age structure of the population has no effect at all whereas educational attainment has a weak impact in rural counties. An inspection of the individual parameter estimates reveals that the share of highly educated people in the regressions using the total sample and the West German sample has a significant positive impact upon the endogenous variable whereas there is no effect in East German rural counties as well as in the city county regression. Thus there is only weak evidence in favor of a positive impact of educational attainment on our endogenous variable. All other control variables taken into account in the regressions do not show up as of any significant and systematic importance.

Thus from our estimate we have to conclude that there seems to be a tendency towards a higher willingness of people to run for a seat in county parliaments - in relation to the total number of seats in county parliaments - in more populated regions. However, the statistical significance is not that strong as the impact of population size on voter turnout. In addition, neither demographics nor the numerous other control variables correlate significantly with our measure of active political participation. Only with respect to educational attainment we find a weak positive impact of a higher share of highly educated people on the endogenous variable. Thus, this evidence too contradicts the hypotheses put forward by the Constitutional Court in the state Mecklenburg-Vorpommern, namely the negative impact of county size on active political participation.

Note, that in our estimate we normalized the number of candidates that run for a seat in county parliaments by the number of seats in county parliaments rather than population or the number of eligible voters. As set out in section 2, there are "political economies of scale" in the number of seats in county parliaments and thus a regression normalizing the number of candidates by population would be "unfair" because in smaller regions there is a higher relation of county parliament seats per 100,000 inhabitants than in larger regions. Thus, assuming everything else equal, a candidate in smaller region has a higher probability to gain a seat in the county parliament. We estimated an extended version of the log-linear function in figure 5 by running the regression $(S/POP) = S_0 POP^\beta$, where S denotes the number of seats in county parliaments and S_0 a composite factor that includes all other variables that we used as controls in the regressions formulated above. The parameter of the area variable was insignificant in all cases. In the regression using all rural counties the parameter estimate of the population variable was -0.64 with a t-ratio of 35 and the estimate yielded an R^2 of 0.96. For the total of urban counties the parameter of the population variable is -0.81 with a t-ratio of about 18 and an R^2 of about 0.99. These estimates imply a value of the parameter β of about 1/3 in rural and about 0.2 in urban counties.

4. Conclusions

This study examined the relation between political participation and the size of regions using data on counties in Germany. Our results indicate that there is a negative impact of the size of regions on voter turnout, but the estimated effect is of secondary quantitative importance only. There is a statistically positive impact of the size of regions on the willingness of people to run for a mandate in county parliaments and therefore our estimates are in line with the "large-is-lively" hypothesis rather than the "small-is-beautiful" counter-hypothesis at least with respect to active political participation.

Looking at our estimation results in more detail reveals that the relation between size and political participation crucially depends upon the type of elections under investigation. Thus in our estimates on county as well as state elections in all estimated regressions at least one of the size indicator variables is significant. For federal elections we got however in one case only a weak statistical effect of the size of regions on voter turnout. Voters regardless whether they live in peripheral areas or in agglomeration, in highly or sparsely populated areas participate in federal elections. This results fits our hypothesis that there seems to be a "hierarchy of elections" that we put forward in section 2 in which we showed that voter turnout at federal elections is not only much higher as compared to local as well as state elections but we also showed, that interregional disparities in voter turnout at federal parliament elections is dramatically lower than at state and county elections. One should assume that this hierarchy is strongly influenced and might have even been formed by the media because federal election are present in both regional and national media whereas local elections get only small attendance by the media - even local newspapers - and state elections are addressed in national media only cursory.

Demographics, measured in terms of the age structure of the population, has a statistical significant influence on voting in state and federal elections whereas local election turnover does not systematically correlate with the age structure. In our estimates on voter turnout measured at the level of counties, the most relevant variable has been our indicator variable for the educational attainment of the population. With respect to active political participation the positive impact of education is much weaker. The effect of educational attainment on voter turnout also turned out to be of non-marginal importance. However, there still remains a lot of unresolved issues because all other control variables - with the exception of the age structure variables in state and federal elections - turned out to be quite insignificant. Thus taking into account that societies around the globe are strongly investing in human capital formation the decline in voter participation that can be observed at least in industrialized countries remains an unresolved puzzle.

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Appendix:

Data sources

Population data: population data, including the information on the age structure of the population as well as the data on non-German population refer to Dec. 31 in each year. Data source: Federal Statistical Office

State and federal election data: data source Federal Statistical Office

County election data: collected at each State Statistical Office

Number of county seats: questionnaire and internet investigation for each county

Number of county parliament candidates: questionnaire sent to each county. In some states the State Statistical Offices supplied the data on each county

Per capita disposable income: Data source: Federal Statistical Office

Foreign: share of non-Germans. Data source: Federal Statistical Office

Educational attainment: Share of employees with a university degree and share of employees without professional education. Data on the number of employed person is available measured at both the place of work and place of residence. We use the latter. Data source Federal Statistical Office

Fiscal data: Data on public debt of counties as well as data on expenditures by counties. Data source Federal Statistical Office

Migration and unemployment data: this data has been supplied by the Federal Office for Building and Regional Planning ("Bundesamt für Bauwesen und Raumordnung", BBR)

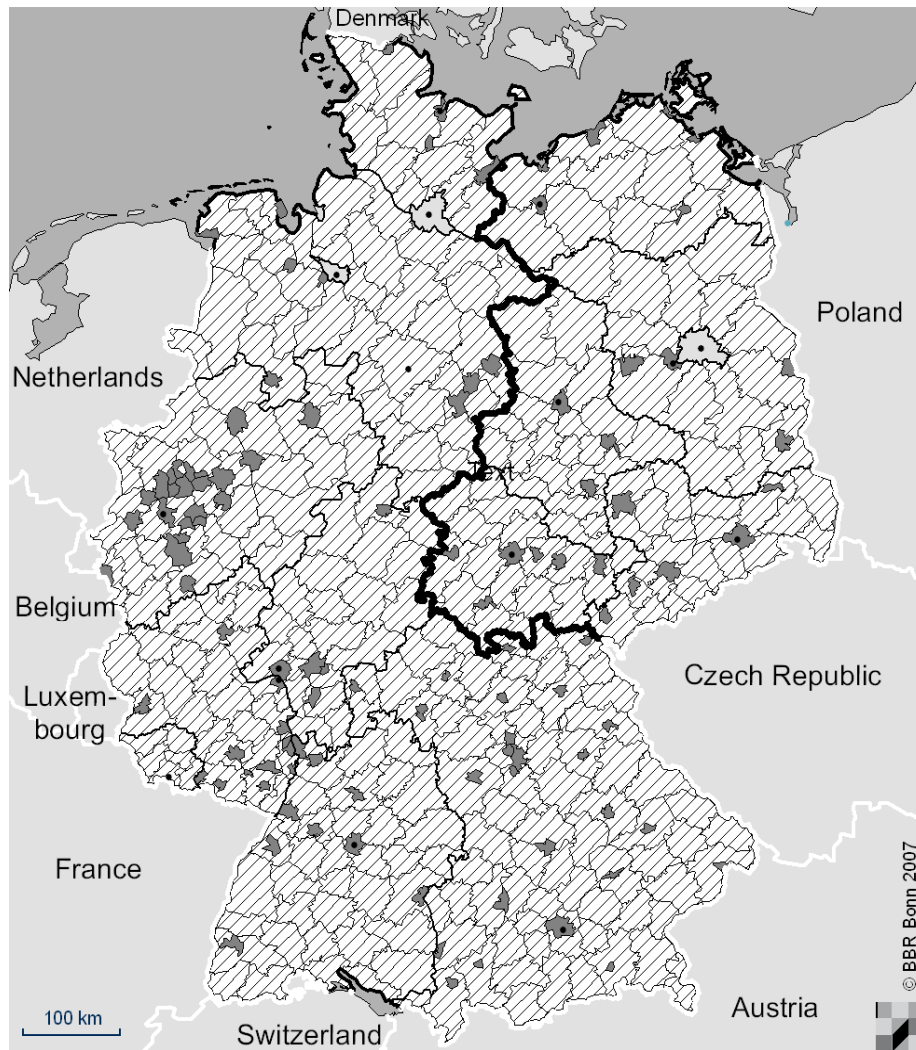
Table A.1 presents a list of the elections, including the exact election day, that are taken into account in our study. In one state the date of state parliament elections was concurrent with federal elections and in one state county elections were held two weeks after state parliament elections.

Table A.1: Elections taken into account in the study

	county election	state election
Schleswig-Holstein	March 2, 2003	Feb. 20, 2005
Niedersachsen	Sept. 10, 2006	Feb. 2, 2003
Nordrhein-Westfalen	Sept. 26, 2004	May, 22, 2005
Hessen	March, 26, 2006	Feb. 2, 2003
Rheinland-Pfalz	June 13, 2004	March, 26, 2006
Baden-Württemberg	June 13, 2004	March 26, 2003
Bayern	March 3, 2002	Sept. 21, 2003
Saarland	June 13, 2004	Sept. 5, 2004
Brandenburg	Oct. 26, 2003	Sept. 19, 2004
Mecklenburg-Vorpommern	June 13, 2004	Sept. 22, 2002 ¹
Sachsen	June 13, 2004	Sept. 19, 2004
Sachsen-Anhalt	June 13, 2004	March 26, 2006
Thüringen	June 13, 2004	June 27, 2004
memo item: federal elections: Sept. 18, 2005. In addition federal elections were hold on Sept. 22, 2002. However, only the 2005 federal elections are taken into account in our estimate.		

¹ On this day, the 2002 federal elections took place.

Counties in Germany



- Urban Counties
- Rural Counties
- City States
- Former Border between East and West Germany

Source: Continuous Monitoring System of the Federal Office for Building and Regional Planning, Geometry: BKG, counties "Kreise" 31. 12. 2003

Source: The map has been kindly provided by the Federal Office for Building and Regional Planning, BBR, Bonn, Germany.

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