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of Local Institutional Settings on Voter Turnout**

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Sharing Competences: The Impact of Local Institutional Settings on Voter Turnout

Institutions are common predictors of voter turnout. Most research in this field focuses on cross-country comparisons of voting systems, like the impact of compulsory voting or registration systems. Fewer efforts have been devoted to understand the role of local institutions and their impact on political participation. Especially the impact of divided competences in relation to public good provision and its impact on voter turnout has been widely ignored. In the present paper, we analyze the effects of different institutional settings for inter-municipal cooperation on voter turnout. We use data from local elections in Germany, held in 2003 and 2004. Overall, we analyze aggregate voter turnout of 1661 municipalities and find strong evidence for our hypothesis that local institutional settings are influential in this context. Further, our results indicate that the better competences correspond to the spatial dimension of local public goods, the higher should be the voter turnout.

Keywords: voter turnout, local institutions, inter-municipal cooperation

JEL classification: D70, D72, H11, H40

Der Einfluss lokaler Institutionen auf die Beteiligung an Gemeinderatswahlen

Seit geraumer Zeit gibt es die Tendenz, kommunale Institutionen zu bündeln um damit Größenvorteile in der Leistungserstellung zu erreichen. In Deutschland haben sich auf der Gemeindeebene unterschiedliche Modelle durchgesetzt, die sich zwischen den Extremen der gemeinsamen Aufgabenwahrnehmung von Gemeinden oder vollständigen Gemeindefusionen bewegen. Das Diskussionspapier geht der bisher wenig untersuchten Frage nach, wie sich dies auf die Beteiligung an lokalen Wahlen auswirkt. Im Zusammenhang mit Institutionen werden in der vorliegenden Literatur überwiegend Auswirkungen des Wahlrechts ländervergleichend diskutiert. Vor allem der Einfluss einer Wahlpflicht oder die Notwendigkeiten der Registrierung zu einer Abstimmung waren Gegenstand der Untersuchungen. Die hier aufgeworfene Fragestellung geht auf lokale institutionelle Aspekte ein. Im Speziellen werden dabei unterschiedliche Formen der interkommunalen Zusammenarbeit und der Verteilung von Entscheidungskompetenzen betrachtet. Aufgrund der vielfältigen Formen der kommunalen Zusammenarbeit in der Bereitstellung öffentlicher Güter, sind diese Fragen vor allem für die Mitgliedsstaaten der Europäischen Union relevant. Betrachtet werden in dem vorliegenden Papier deutsche Gemeinderatswahlen in den Jahren 2003 und 2004. Der Einfluss unterschiedlicher Gemeindetypen wird modelliert und ökonometrisch untersucht. Dabei finden sich deutliche Anzeichen für einen Einfluss der institutionellen Ausgestaltung interkommunaler Kooperationen auf die lokale Wahlbeteiligung. Darüber hinaus zeigt die empirische Analyse, dass die Wahlbeteiligung dort höher ausfällt, wo die Nutznießer öffentlicher Leistungen den Wahlberechtigten entsprechen und diese die entscheidenden Gremien direkt wählen können. Die institutionelle Ausgestaltung kommunaler Zusammenarbeit in Verbandsgemeinden nach Rheinland-Pfälzischem Vorbild scheint diesen Erfordernissen am ehesten zu entsprechen.

Schlagworte: Wahlbeteiligung, lokale Institutionen, Gemeindeneuordnung

JEL-Klassifikation: D70, D72, H11, H40

1 Introduction

Since Downs (1957) introduced the economic theory of democracy, enormous scholarly efforts have been made to understand what affects voter turnout. Until today, an extensive literature emphasises the importance of socioeconomic aspects, political competition and institutional features on aggregate turnout (for reviews of the theoretical side see Dhillon and Peralta 2002, Blais 2006, Geys 2006a; for a comprehensive review of the empirical literature see Geys 2006b). The work on institutional settings mainly focuses on cross-country comparisons of the voting system, for example the impact of compulsory voting or registration systems. Fewer efforts have been devoted to understand the role of local institutions: most studies examine the impact of nonpartisan election or the split of local elections from the traditional electoral calendar (for a review see Caren 2007). Particularly for the US exists another strand of literature, which focuses on the impact of the council-manager form of government and the outsourcing of local public goods to private providers on turnout. The common finding is that eroding political power of elected municipal councils negatively affects voter turnout (see Wood 2002, Hajnal and Lewis 2003).

The present paper focuses on other local institutional aspects that, as far as the authors are aware, have not been investigated by scholars so far. Various forms of inter-municipal cooperation, mainly represented in Western European Countries, have so far been neglected in the literature. Driven by the idea to realize economies of scale and to internalize spill-over effects, municipalities often merge or cooperate in the provision of local public goods. This affects procedures of political decision making and their political legitimating which can, as we argue, reduce or increase complexity in the voting decision. How these arrangements influence voter turnout, depends, in our view, on how decision making and electoral processes correspond to the scope of the provided public services. We argue that Mancur Olson's (1965) basic idea of an optimal provision of public goods and, in this sense, an optimal design of local institutions is directly linked to turnout: the better the electorate corresponds to the collective of financers, the less complex should be the voting decision and, the higher should be voter turnout. Of course, ballots on the provision of every single public good are not desirable since this would increase the complexity of political decision making and cause unnecessary frustration among voters. However, we argue that when designing new local institutional arrangements, their doubled function as complexity reducing entities needs to be considered.

In this paper, we aim to analyze the above outlined idea empirically. We test our hypothesis by using data from local elections in Germany, taking advantage of the heterogeneity of the German municipal structure and assessing the influence of three types of institutional arrangements (i.e. centralized, semi-centralized and decentralized municipi-

palities) on voter turnout. Therefore we use cross sectional data for local elections in 1661 municipalities and cooperative municipalities from the years 2003 and 2004.

The paper is organized as follows. The next section provides a short discussion of the existing literature on the impact of local institutions on turnout. Within this section, we theoretically discuss the relationship between concentration of competences and political legitimating of institutions that motivate our hypothesis. Section three contains an overview on Germany's municipal constitution. We describe several institutional features to derive at the types of municipalities which should be compared. Section four states the tested hypothesis followed by the empirical part of the paper in section 5. After a short description of the respective methodology, we introduce our model and provide tables of descriptive statistics. Finally, we present and discuss our results.

2 What do we know about voter turnout so far?

Theoretically, most of the present research refers to the economic theory of democracy introduced by Downs (1957). Downs argued that individuals participate in polls when benefits from voting exceed costs. Benefits from voting are defined as the difference between utility of policy alternatives multiplied by the individual probability to affect aggregated voting outcome. Since the probability to have an impact on the result of an election is very low and declines with the size of the electorate, large scale abstention in polls is the predicted result of Downs' considerations. Additionally, it is argued that since the utility of participation is very small, any costs of voting larger than zero must keep individuals away from the voting box. In reality, however, in most elections voter turnout is remarkably high, which led researchers to conclude that there exists a *paradox of voting* (see Riker and Ordeshook 1968, p. 31). This finding has been adopted by scholars as a starting point to add further explanations to the rational choice model (for a brief review see Geys 2006a) and to find alternative explanations for voter turnout.

There is a large strand of literature dealing with individuals' decision to vote using survey data (for a review of empirical work see Prewitt and Nie 2009). Others are aiming to explain aggregate voter turnout between states, counties or on the local level. For example, researchers found that national polls attract more voters than regional or local elections (see Marsh 1998), which is explained by the model of Second-Order Elections (see Norris 1997). Further, researchers attempted to incorporate institutional features into people's voting rationality (see e.g. Jackman 1987, Merrifield 1993).

As we draw on the impact of local institutions on turnout, we concentrate our theoretical discussion on these aspects. For other commonly tested variables we take advantage of previous studies and refer the reader to the review of Geys (2006b). Scholars have extensively discussed the impact of socio-economic aspects on voter turnout focusing on the impact of population size, population concentration, an electorate's age structure, income or homogeneity of population. Secondly, political competition has been proven

to be influential on turnout. Here, for example, the closeness of an election or the competition between parties has been the focus of scholarly attention. Thirdly, institutional aspects have been widely discussed. The following section outlines theoretical approaches in this context and provides an extension of the discussion on the role of uni-versus multicameralism political systems on a local level.

2.1 The role of institutions in local elections

The relationship between institutions and local voter turnout has only been selectively applied in the literature. Most of the studies available focus on the structure of government and electoral procedures (for a review see Caren 2007). Studies on electoral procedures or the voting system mainly address aspects like nonpartisan elections (see e.g. Karnig and Walter 1983, Schaffner, Wright and Streb 2001), the timing of an election (Hajnal and Lewis 2003), registration procedures (see e.g. Brians and Grofman 1999), voting district sizes (see Bullock 1990) or term limits (see Copeland 1997).

In the structural context, an often discussed hypothesis relies on the work of Jackman (1987), who introduced the argument of political power and its division between several chambers as a determinant of voter turnout. The argument of political power is mostly discussed in the context of a formal reallocation of responsibilities between political institutions like strengthening a city manager in disfavor of the elected municipal mayor or the number of political institutions which are involved in decision making (see e.g. Merrifield 1993). In this case, Jackman argues that an institutional setting that concentrates political power on one legislature leads to higher voter turnout than a setting that spreads responsibilities between several chambers (see Jackman 1987 p. 408, Blais 2006). Some scholars found supporting evidence, showing that weakening the power of political decision makers leads to declining participation in polls (see e.g. Cain et al. 2001, Wood 2002) Others on the other hand, did not succeed in verifying Jackman's hypothesis (Radcliff and Davis 2000, Pérez-Liñán 2001).

In this context we argue, that the twofold empirical results may be explained by introducing a further aspect to the discussion. In particular, we believe that the complexity of a voting decision is influenced by the institutional setting, especially by the cameralistic system of a jurisdiction. As already introduced by Mancur Olson (1965), an optimal allocation of local public goods occurs when the collective of beneficiaries corresponds to the collective of financers and decision makers. Consequently, to fulfill this optimality restriction one had to hold polls for nearly every single public good, which would allow voters to clearly distinguish between alternatives and to state their preferences. Although this would clearly add transparency to the voting decision, it also fosters complexity in political decision-making. It can be argued that jurisdiction size should therefore be optimized with respect to the spatial dimension of tasks and that the scope of institutional competences should be optimized respectively. In reality this restriction is, however, commonly violated which may lead to a loss of political participation (e.g. voter turnout) or a loss of efficiency in political decision making.

On the local level, many countries therefore allow for inter-municipal cooperation (see Kelly 2007), where municipalities can provide public goods and services jointly. In this case we argue that different institutional settings, in particular the (de)concentration of competences, can reduce or foster complexity in decision-making and therefore directly influence voter turnout.¹ We briefly discuss these arguments in the following paragraphs.

For simplicity we use the following assumptions to theoretically investigate the effects of a concentration of competences on the municipal or the joint level and i.e. the effects of different institutional setting on voter turnout:

- a) Two municipalities (A and B) produce two bundles of goods: x is a bundle of locally distinct goods while the bundle y has to be provided jointly.
- b) Preferences in A and B differ concerning both, the bundles of good x and y .
- c) The competences to decide about *how* and *how much* of the goods are provided are concentrated on the legislative (the elected municipal council and mayor).
- d) There is no asymmetry of political power between A and B (e.g. in the size of the electorates).

Case 1: Municipalities remain independent - Good y is provided in A , while B is incorporated in financing without any competence to decide about the provision of good y

In this very simple case, institutions in Municipality B are less powerful than in A . Following Jackman (1987), this should decrease turnout in B , while output in A should increase. This finding is consistent with empirical research of Hajnal and Lewis (2003), who investigated the effect of outsourcing of municipal tasks on turnout. They conclude that an erosion of political power, measured by the number of services provided by city staff, negatively influences turnout (see Hajnal and Lewis 2003, p. 657).

Case 2: Municipalities remain independent and decide in consensus about the provision of good y

In this case, elections are held separately in A and B . Political actors optimize their offers with respect to the local preferences to maximize electoral outcome. For eligible voters, the rationality to vote for a bundle of goods provided locally remains unaffected. But the principle of consensus between the municipalities for the provision of goods y adds uncertainty to the voting decision. Whatever the locally chosen level of y is going to be, the actual outcome differs when preferences between the municipalities vary. The

¹ An approach to incorporate information into the Rational Choice framework is offered by Matsusaka (1995). He concludes, that information itself does not necessarily foster turnout. Instead he argues that confidence about the voting decision is a good predictor for turnout. One can understand complexity as one determinant of confidence.

probability to achieve the desired level of y can be seen as a decreasing function of differing preferences. Further when allowing more than two municipalities to participate in the cooperative production of the good, it also reflects a decreasing function of the number of jurisdictions involved. Relaxing the assumption of equally distributed power between municipalities can also negatively affect voters' expectations of outcome in less powerful municipalities. Compared to the situation without any cooperation, these arguments suggest that individuals face a significantly more complex voting decision.

Case 3: Municipalities merge all institutions, including competences and polls

When institutions and competences are completely merged, outcome-uncertainty related to the amount of y (due to consensual decision making) disappears. Furthermore, if the number of political stakeholders remains constant (e.g. when there is a fixed number of parties active in A and B and nonpartisan voting is excluded), complexity in the voting decision is reduced compared to case two.² Political stakeholders optimize their offers concerning the bundle y with respect to the aggregated preferences of A and B . But increasing complexity for the decision on the bundle of goods x can be assumed. When financial resources of the municipality are limited, a tradeoff between x_A and x_B occurs, which reflects locally distinct bundles in A and B . Political offers have to consider these restrictions and have to make an offer on y , x_A and x_B , which may lack in spatial accuracy. Further, voters in A have to decide about locally distinct goods in B (x_B) and vice versa – instead of deciding about two bundles of goods, political offers contain a third bundle which negatively influences transparency of voting alternatives. This clearly adds complexity and therefore negatively affects voting turnout. Compared with case 2, it is uncertain which institutional arrangement leads to larger voter turnout since the strength of the opposing effects of increasing and reducing complexity are unknown.

Case 4: Municipalities merge competences and polls for good y and preserve independence concerning the provision of good x

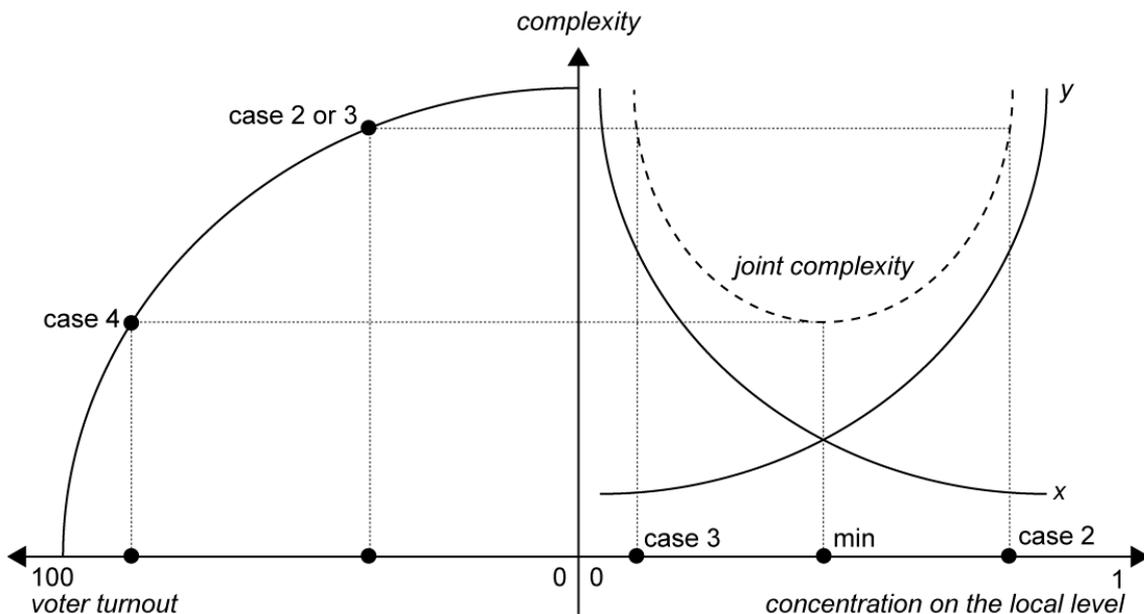
If competences are divided between one joint municipal council for $A+B$ and two others in A and B (corresponding to the types of goods x and y), elections are simultaneously held and decisions are independently, the advantages of concentration (for good y) and de-centralization (good x) concerning turnout can be preserved. Voters can decide which amount of x should be provided on the local level without considering the level of public services in other municipalities. Moreover, decisions on y are made jointly reducing uncertainty about the actual outcome. Additionally, voters are able to split their vote between parties, when participating in both elections. This can enable voters to maximize utility compared to the other institutional settings (Case 1-3).

To summarize, one can argue, that voter turnout is a decreasing function of complexity of the voting decision. Complexity is determined by the institutional arrangement of a

² The effects of Multipartyism are already addressed by Downs (1957), p. 155 and are briefly discussed by Jackman (1987), p. 408.

municipality and thus largely depends on the degree of concentration of competences on different municipal levels. For locally distinct goods (x) the relationship between the concentration of competences on the local level and complexity can be assumed to be negative: the more competences are concentrated on the local level, the less complex is the decision in regard to the bundle of goods x . For the bundle of goods that are locally indistinct (y), this relationship can be assumed to be positive as complexity increases the more competences are concentrated on the joint level. The joint complexity curve (the sum of the complexity curve x and the complexity curve y) can be approximated as an inverted u-shaped. Turnout is maximized at the minimum of the joint complexity curve. A stylized graphical solution is presented in figure 1 where it is assumed that the effects of concentrating competences on the local or the joint level are equal.

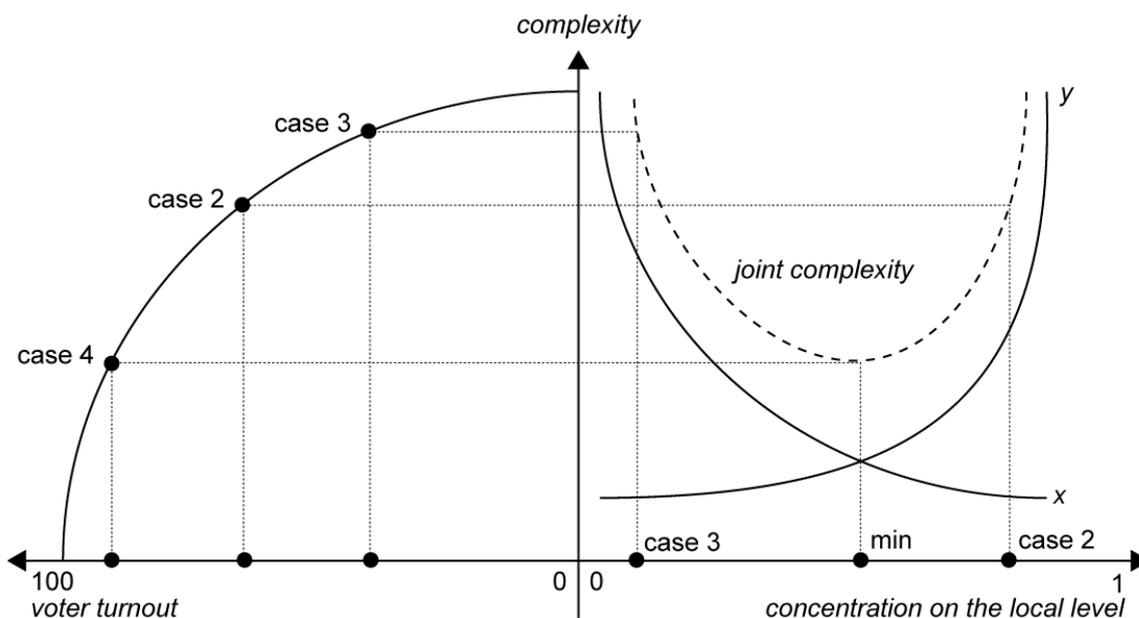
Figure 1:
Effects of concentration of competences on complexity of voting decisions and turnout



Source: Compilation by the authors.

When the assumptions hold, one can expect institutional settings to be influential on voter turnout in a way that has not been discussed in the literature so far. Further, one can argue that institutional settings that concentrate competences according to the types of local public goods minimize complexity of the voting decision and therefore maximize voter turnout.

Figure 2:
Results for a dominating effect of concentration on the local level



Source: Compilation by the authors.

In figure 2 it is assumed that the advantages of concentrating competences on the local level dominate the advantages for the provision of y on the joint level. In this case, turnout in municipalities described in case 2 should be larger than turnout in municipalities described in case 3. Theoretically, it is uncertain which effect dominates the other and needs to be scrutinized empirically.

3 The Institutional Setting in the Field of Local Government in Germany

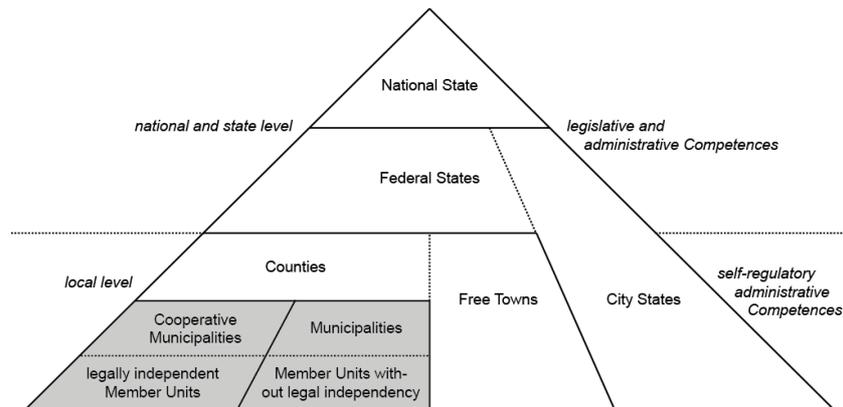
To test the above stated relations empirically, the authors chose Germany's municipal structure, as its institutional arrangements cover the described features of concentrating competences on different local levels. Further, other institutional features which are mentioned to be influential in the literature, like the voting system, nonpartisan voting, registration requirements, term limits and others are in their core identical between German municipalities. Thus, when these institutional effects are negligible for Germany, we can observe the pure effect of the concentration of competences on the complexity of the voting between municipal levels and therefore the effect of institutional settings on voter turnout. In the following we introduce the types of municipalities that are observable in Germany.

3.1 Germany's federal organization

Legislative competences in Germany are federally organized and divided between national and federal-state level. From a legal perspective, local authorities are understood as self-regulatory bodies within the federal states administration and which indirectly fulfil federal state administrative tasks. Nevertheless local administrations can act autonomously, guaranteed by the second paragraph of Article 28 of Germany's Constitution (Art. 28, Abs. 2 GG). This means (following the principle of subsidiarity) that the competences to provide public goods and services are concentrated on the local level unless legal regulations delegate the provision to higher administrative bodies.³

The local self-administration is organized in counties ("Kreise"), free towns ("kreisfreie Städte"), municipalities ("Gemeinden") or cooperative municipalities ("Verwaltungsgemeinschaften") (see Figure 3). The institutional setting and scope of the provision of public goods and services are determined in the federal states' legal framework, which differs significantly between states.

Figure 3:
Vertical separation of Powers in Germany



Source: Compilation by the authors.

3.2 Municipal Tasks and Competences

On the local level, there are three types of public goods and services provided by municipalities:⁴

- a) *Obligatory tasks of the transferred sphere of responsibilities* include the public goods and services, which are provided by municipalities on behalf of the federal state. Municipalities act as if they were part of the federal states administration. Municipalities cannot decide *if, how much* or *how* a certain good is provided. Local au-

³ For a more detailed description of Germany's federal system see for example Biehl (1994).

⁴ A detailed description of municipal tasks is given by Zimmermann (1999), pp. 112 ff.

thorities can only decide about the administrative effort, as long as the legally defined standards are fulfilled.

- b) *Obligatory tasks of the own sphere of responsibilities* include the public goods and services, which have to be provided by municipalities, where Federal states' legal settings define minimum standards of the provision. Municipalities can furthermore decide to provide additional services and *how* the local administration should provide respective goods. For example, municipalities are responsible for providing fire departments, sewerage systems and urban land-use planning.
- c) *Voluntary tasks of the own sphere of responsibilities* include the public goods and services, which can be provided by the local administration. Local authorities decide *if, how* and *how much* of a certain good is provided. For example, municipalities can maintain sports or cultural facilities like orchestras, theatres or stadia.

For providing goods and services, municipalities have a substantial range of competences. Municipal councils have the right to determine the level of local taxes and to issue local statutes. Further, municipalities have an own administration to provide the respective goods and services.

3.3 Institutional arrangements on the municipal level

In Germany the federal states' legislations decide on local government institutions. As a consequence, several municipal types exist in the states. The LAU1 (local authority level) classification by eurostat contains seven terms for German municipalities,⁵ which differ in their organization, their competences and slightly in their voting system. Nevertheless the main features of local government are quite similar throughout Germany. In some states, municipalities are divided into sub-units. Therefore, local authorities can be classified by their distribution of competences which can be concentrated at one level for all member units of a municipality or which can be locally shared out to the member units. Thus, municipal institutional arrangements fall roughly into three categories.⁶

- a) *Municipalities with competences and institutions concentrated on the joint level – Type A*

Most commonly, municipalities fulfill their administrative tasks in own responsibility. So called "kreisangehörige Gemeinden", which are not member of cooperative municipalities, decide (within the federal state's legal framework) on their own about *if, how* and *how much* of a certain good or service they want to provide. Decisions are made in city councils and are implemented by the local administration. Mayors have a dual position: they act as both, highest representative of a municipality and head of the admini-

⁵ The data of the European Statistical Office contains the terms: "Kirchspielslandgemeinde", "Amt", "Samtgemeinde", "Verbandsgemeinde", "Verwaltungsverband", "Verwaltungsgemeinschaft" and "kreisangehörige Gemeinde". See *EUROSTAT*.

⁶ For a detailed comparison of municipal types see *Rosenfeld et al. 2007*, pp. 75 ff.

stration. The city council and the mayor are elected directly by the citizens of the respective municipality. Local elections (“Kommunalwahlen”) are held every five or six years.

In the past, there was a tendency to increase the size of municipalities to achieve economies of scale in the provision of local public goods and services. Generally, federal state law defines a minimum size for local authorities.⁷ To achieve this, formerly independent municipalities can merge to larger municipality (so called “Einheitsgemeinde”) with one city council, mayor and administration. In many cases, a second body of political representation is introduced; so called “Ortschaftsräte” are elected simultaneously to the city council and deliberate on local affairs of the member units of the centralized municipality. Yet, these bodies have no competences to decide about the provision of goods – they are purely implemented as advisory boards. Centralized municipalities can be found in every federal state of Germany, except for the city states, which are municipalities and states at the same time.

b) *Municipalities with competences and institutions concentrated on the local level – Type B*

A second type of local governmental arrangements is the locally concentrated municipality, which can be found in nine federal states. LAU1 classifications are “Amtsgemeinde” (Schleswig-Holstein, Mecklenburg-Western Pomerania, Brandenburg), “Kirchlandspielgemeinde” (Schleswig-Holstein), “Verwaltungsgemeinschaft” (Bavaria, Saxony-Anhalt, Thuringia) or “Verwaltungsverband” (Baden-Wuerttemberg, Saxony).

In contrast to Type A, the member units of cooperatives (or administrative collectivities) remain legally independent although wide ranges of competences are assigned to a centralized level. These competences are executed in “borrowed” responsibility. The main characteristic of a Type B municipality is the double-layered decision process. The first stage of decision-making is located on member units (the local) level where the local council decides, which of the obligatory and voluntary tasks of the own sphere of responsibilities are transferred to the centralized level. Furthermore the local council defines the amount (*how much*) of the local public good should be provided. Regularly, the obligatory tasks of the transferred sphere of responsibilities are completely transferred to the centralized level.

⁷ The size and other institutional features are regulated in the “Gemeindeordnungen“ or “Kommunalverfassungen” of the federal states. For the regulation of the minimum size see for example *Kommunalverfassung des Landes Brandenburg* (BbgKVerf) §133.

Table 1:
Institutions and Competences on the municipal level – an Overview

	Type A Municipalities		Type C Municipalities		Type B Municipalities	
	Joint Level	Local Level	Joint Level	Local Level	Joint Level	Local Level
Institutions and democratic legitimation						
Institutions	City Council	/	election	election	/	election
	Local Representative	election	/	/	/	/
	Mayor	election	/	election	/	election
	Administrative Council	/	/	/	/	Members delegat- ed by city council
	Administration	centralized	/	centralized	/	semi-centralized
Competences to decide about...						
Municipal Tasks	Obligatory tasks of transferred sphere of responsibilities	(how)	/	(how)	(how)	/
	Obligatory tasks of own sphere of responsibilities	how much & how	/	how much & how	how	how much & how
	Voluntary tasks of own sphere of responsibilities	how much & how	/	how much & how	how	how much & how
Baden-Wuerttemberg Bavaria Brandenburg Hesse Lower Saxony Mecklenburg-Western Pomerania North Rhine-Westphalia Rhineland-Palatinate Saarland Saxony Saxony-Anhalt Schleswig-Holstein Thuringia						
(/) indicates no presence of the respective feature						

Source: Compilation by the authors.

On the second stage, the joint administrative council decides on how the goods and services are produced and coordinates comprehensive municipal tasks for political decisions in the local councils. In practice, consensus about the level of public services (*how much*) is found on the joint level. Depending on the scope of the transferred tasks, the administration is concentrated and is normally located in the largest member unit of the administrative collectively. Other member units still have the competence to maintain own administrative facilities for tasks that are not transferred to the central level. In addition, local councils have a veto right, when decisions about how a good should be provided do not meet the local requirements or preferences. The members of the joint administrative council are the mayors of the member units and additionally (depending on the size of a municipality) deputies, elected by city councils. City councils and mayors are directly elected every five or six years. On the joint level, no separate elections are held.

c) *Municipalities with competences and institutions concentrated on both levels – Type C*

The third form of local government can be seen as a hybrid between the two types described above. Type C municipalities are implemented in Rhineland-Palatinate (“Verbandsgemeinden”) and in Lower-Saxony (“Samtgemeinde”).

Like in administrative collectivities, there exists a double-layered decision process and the member units of semi-centralized municipalities remain legally independent. However, in contrast to Type B municipalities, both levels are politically legitimated by polls which allow for a higher degree of concentration of competences on the joint level. On the higher level, a joint municipal council and a mayor are elected. Like in Type B municipalities, the joint level is responsible for the provision of *obligatory tasks of the transferred sphere of responsibilities*. Additionally, federal states’ legal settings define the minimum scope of transferred Obligatory tasks of the own sphere of responsibilities from the local to the joint level of the municipality, while (in contrast to Type B municipality) the central level can decide about *how much* and *how* a certain good or service is provided. For example, in Rhineland-Palatinate the joint level is responsible for schooling, fire protection, sports facilities, social facilities, water supply and sewerage by law (see GemO Rhineland-Palatinate §67).

If not transferred to the joint level, the local authorities can decide about how and how much of a certain good is provided. As in Type B municipalities, there are city councils and mayors on the local level. Compared to the Type B entities, the scope of local responsibility is smaller though political legitimation for the aggregate municipality is larger (see Rosenfeld et al. 2007, p. 93).

4 Hypotheses

Against the background of the local institutional setting in Germany we derive the following hypotheses from the theoretical discussion in section 2. Thereby we distinguish a weak and a strong hypothesis. The first weak one states that the division of competences between different administrative levels of local political entities to decide about if, how and how much of a certain good is provided affects voter turnout. In other words, despite the mere size-effect on voter turnout, the local institutional setting of administrative entities does matter.

(H1) The local institutional setting does affect voter turnout.

The weak hypothesis is nested in an empirically more powerful one which explicitly refers to the structural differences observed at the German municipal. As discussed in section 2, we expect municipalities of type A to have the lowest turnout since there is no possibility to optimize the allocation of competences between different administrative levels within this organisational setting (see Table 1). On the contrary, municipalities of type C have two elected administrative levels and hence should have the highest turnout. Thus,

(H2) The municipalities of type A have the lowest and municipalities of type C have the highest voter turnout.

Regarding the differences between type C and type B municipalities we therefore implicitly assume that the flexibility of shifting competences on a centralized administrative level, which is possible in municipalities of type B, is overcompensated by the lack of political legitimation in this organisational setting.

5 Empirical Implementation

We test the hypotheses formulated above by modelling the turnout in $i = 1, \dots, N$ German municipalities and cooperative municipalities as follows.

$$\text{turnout}_i = \alpha + \varphi_A \cdot D_i^A + \varphi_C \cdot D_i^C + \beta \cdot X_i + \nu_i \quad (1)$$

Where α , φ_A , φ_C , β denote parameters and ν_i denotes an i.i.d. error component. Besides the control variables X_i , which are discussed in the next section, we include two dummy variables D_i^A and D_i^C , which indicate the institutional setting observed to be of type A or type C respectively.

In Equation (1) the weak hypothesis (H1) states that there is no effect of the local institutional setting on turnout, which can be tested by a joint test of the parameters φ_A and φ_C to be commonly zero. The more ambitious strong hypothesis (H2) is also captured by the dummy variables D_i^A and D_i^C in Equation (1). The parameters φ_A and φ_C meas-

ure the difference in turnout relative to the base category which is a type B institutional setting in our set up. According to the strong hypothesis (H2) we expect the estimated coefficients φ_A and φ_C to be significantly different from zero and to have a positive and a negative sign respectively.

5.1 Data and Descriptive Statistics

For estimating equation (1) we use a data set provided by the statistical offices of the federal states on voter turnout in local elections supplemented with data on the socio-economic and spatial structure of the respective political entities. Altogether, in Germany exist about 4,550 municipalities and cooperative municipalities with different institutional arrangements as discussed in section 3.

Table 2:
Structure of the Sample, date and purpose of the election

Federal State	Date of Election	Concurrent Elections	Institutional Type		
			A	B	C
Schleswig-Holstein (SH)	March, 2 nd 2003		101	118	-
Rhineland-Palatinate (RP)	June, 13 th 2004	EU	37	-	163
Baden-Württemberg (BW)	June, 13 th 2004	EU	179	272	-
Brandenburg (BB)	October, 26 th 2003		143	54	-
Mecklenburg-Western Pom. (MV)	June, 13 th 2004	EU	52	97	-
Saxony-Anhalt (SHT)	June, 13 th 2004	EU	40	157	-
Thuringia (TH)	June, 13 th 2004	EU, state	157	91	-

Source: German Federal Statistical Office, calculations by the authors.

For our analysis we dropped all observations from larger free towns, so-called “kreisfreie Städte”, and from the city states Berlin, Bremen and Hamburg, since these administrative entities additionally carry out tasks of higher administrative levels (county and state) as depicted in Figure 3. In order to ensure comparable political conditions at the national level we further restrict our sample to local elections, which took place within the national legislative period between 2002 and 2005.⁸ Thus the observations from Bavaria and Lower-Saxony are dropped.⁹ Finally, due to data availability issues, our

8 This issue is strengthened by the fact that the National election in 2005 was actually scheduled for 2006. The intention to ask for a vote of confidence and therewith to reschedule the national election was announced by chancellor Schröder in May 2005. Hence, the election campaign of the national election 2005 did not affect the elections held in 2004 analyzed in our study.

9 Municipal elections in Lower-Saxony took place in 2001 and 2006. In Bavaria the elections on the local level took place in 2002 and 2008.

data set consists of 1,661 municipalities and cooperative municipalities from seven German federal states. (see Table 2).

As depicted in equation (1) we use several socio-economic control variables to identify the impact of local institutions on voter turnout. We therefore take advantage of the existing literature that provides an elaborate pool of covariates, which should affect the utility or the cost of voting (for an extensive review see Geys 2006). Variable definitions and descriptive statistics are provided in Table 3.

First of all and in line with previous studies we include the total number of all eligible voters in order to capture the *size-effect of the electorate*, which we expect to have a negative impact on voter turnout (Seitz 2008, Matsusaka and Palda 1999, Blais and Dobrzynska 1998). Another important factor on turnout is *population density*, which approximates differing social pressure, interpersonal bonds and consensus on norms between rural and urban areas (Riker and Ordeshook 1968, Overbye 1995). In rural areas these factors are assumed to be more effective. Hence, we expect a negative impact of population density on voter turnout.

According to several empirical studies, another relevant determinant of voter turnout is the *stability of the population* within a jurisdiction. Stability in most studies is related to migration and mobility. A more stable population is expected to affect voter turnout positively because of a higher degree of group solidarity (Hoffman-Martinot 1994; Ashworth et al. 2002). There are several different measures for stability introduced in the literature, including the migration balance of a jurisdiction or the ratio of homeowners, which are assumed to be less mobile (see Geys 2006b). We include population mobility which is defined as the sum of in- and outmigration divided by the number of inhabitants. We expect to find a negative impact of this factor on voter turnout.

Furthermore, it has been argued that population's *homogeneity* within an electorate could lead to higher costs of non-voting induced by social pressure (see Cohen 1982). On the other hand, heterogeneity could lead to higher voter turnout because voters have a strong interest to defend their positions against other social groups (see Zimmer 1976). We incorporate the long term unemployment rate and the Herfindahl index of the age structure into our model in order to account for homogeneity effects (Verba and Nie 1972, Geys 2006b).

Finally, most empirical studies find a significant impact of education on voter turnout (Ashenfelter and Stanley (1975), Brody and Page (1973), Guttmann). That is why we include the share of highly qualified and the share of low qualified inhabitants in our empirical model. According to previous studies we expect to find positive and negative signed parameter-estimates respectively.

Table 3:
Variable definition and descriptive statistics

Variable Definition		Summary Statistics		
Variable	Description	Mean	Sd.	Min; Max
<i>Endogenous Variable</i>				
<i>turnout</i>	Proportion of eligible to actual voters.	0.5483	0.0827	0.28; 0.77
<i>Control Variables</i>				
<i>Dummy_typeA</i>	Equals one if the institutional setting of the municipality is of type A.	0.4269	0.4948	0;1
<i>Dummy_typeC</i>	Equals one if the institutional setting of the municipality is of type C.	0.0981	0.2976	0;1
<i>Population</i>	Number of registered voters at the date of the election.	9912	8573	282; 80047
<i>Population Density</i>	Number of people living on a square kilometre of municipal space.	247.7	310.9	10.0; 2526
<i>Population Mobility</i>	Sum of in- and outmigrants divided by the number of inhabitants.	0.1144	0.0344	0.02; 0.54
<i>HHI_age</i>	Normalized Herfindahl-Index regarding the age-structure	0.0698	0.0034	0.06; 0.11
<i>Unemployment</i>	Share of people who have been jobless for more than 12 months.	0.0282	0.0541	0; 0.73
<i>Education_high</i>	Share of the population with university degree.	0.0143	0.0197	0; 0.53
<i>Education_low</i>	Share of the population without vocational training and without A-level degree.	0.0334	0.0257	0; 0.25
<i>Dummy_EU</i>	Equals one if the EU-election 2004 took place concurrently.	0.7495	0.4334	0;1
<i>Dummy_state</i>	Equals one if the state-election took place concurrently (only Thuringia).	0.1493	0.3565	0;1
<i>Dummy_east</i>	Equals one if the municipality is located in the area of the former GDR.	0.4762	0.4996	0;1
<i>Dummy_RP</i>	Equals one if the municipality is located in Rhineland-Palatinate.	0.1204	0.3255	0;1
<i>Dummy_BW</i>	Equals one if the municipality is located in Baden-Württemberg.	0.2715	0.4449	0;1
<i>Dummy_MV</i>	Equals one if the municipality is located in Mecklenburg-Western Pomerania.	0.0897	0.2858	0;1

Number of Observations 1661

Source: calculations by the authors.

Last but not least, in order to capture possible effects of concurrent EU or State-level elections, we include an EU-election and a State-election dummy. The EU-dummy additionally controls for a level shift in voter turnout between the years 2003 and 2004 (see Table 2). Remaining unobserved level-effects are accounted for by an East-Germany-dummy, which accounts for all municipalities located in the area of the former GDR as well as three added country dummies. Additional country-dummies cannot be incorporated to avoid linear dependency (see Table 3).

5.2 Econometric Issues

In equation (1) the dependent variable *turnout* is bounded between zero and one. Thus, we need to employ an estimation method which is able to deal with fractional response variables. The frequently used linear, tobit or logit models do not solve the specific problems of fractional dependent variables satisfactorily.

For example, using Ordinary Least Square (OLS) methods implicitly ignores the bounded nature of the dependent variable and implicitly assumes a constant effect for all explanatory variables on *turnout* over its entire range. Moreover, the predicted values from OLS regression can never be guaranteed to lie within the interval (Papke and Wooldridge 1996). Applying a two-limit Tobit to proportional data indeed ensures the predicted values to be within the unit interval but this is true by definition not caused by censoring (Kieschnick and McCullough 2003). Several previous studies commonly use Logit models to overcome the limitations of the aforementioned models. However, after logit-transforming the dependent variable it is not straightforward to recover the original conditional mean function, which is of main interest in our study (Papke and Wooldridge 1996).

In our case, without any observation at the boundary values zero and one (see Table 3) two main approaches for estimating Equation (1) have been proposed in the literature. The first approach is the quasi-maximum likelihood procedure proposed by Papke and Wooldridge (1996). The second one is to estimate the conditional mean function by maximum likelihood assuming a beta-distribution.

The latter approach is consistent, asymptotically normally distributed and fully efficient if the assumed conditional density is correctly specified. Most researchers use a mean-dispersion parameterization of the beta-density suggested by Paolino (2001) and Ferrari and Cribari-Neto (2004) in order to simplify the interpretation of the parameter estimates. In this specification a functional form is modeled separately for the mean and the dispersion. The beta-density then can be parameterized as:

$$f(\textit{turnout}_i | \mu_i, \phi) = \frac{\Gamma(\phi)}{\Gamma(\phi)\Gamma((1-\mu_i)\phi)} \textit{turnout}_i^{\mu_i\phi-1} (1-\textit{turnout}_i)^{(1-\mu_i)\phi-1} \quad (2)$$

with

$$E(\textit{turnout}_i) = \mu_i \quad (3)$$

and

$$\textit{Var}(\textit{turnout}_i) = \frac{\mu_i(1-\mu_i)}{1+\phi} \quad (4)$$

where $\Gamma(\cdot)$ is the gamma function, $0 < \textit{turnout}_i < 1$, $0 < \mu_i < 1$ and $\phi > 1$. The mean of the dependent variable *turnout* now can be modeled using different link-functions, which ensure the expected value of *turnout* to be bounded by 0 and 1. We follow previous studies and use the convenient logit-link:

$$E(\textit{turnout}_i | z_i) = \mu_i = \frac{e^{z_i' \pi}}{1 + e^{z_i' \pi}} \quad (5)$$

here z_i stands for a matrix of all explanatory variables in Equation (1), including the dummy variables. π subsumes the corresponding parameter vector. As mentioned above, the essential drawback of the fully parametric approach is that it yields inconsistent parameter estimates if the conditional density of the dependent variable is incorrectly specified.

This is the reason why Papke and Wooldridge (1996) suggest a quasi-parametric regression model, which just assumes that:

$$E(\textit{turnout}_i | z_i) = G(z_i \pi) \quad (6)$$

The known nonlinear function $G(\cdot)$ satisfies $0 \leq G(\cdot) \leq 1$. Typically, the function $G(\cdot)$ is chosen to be a cumulative distribution function. For our analysis we follow the majority of previous research and chose $G(\cdot)$ to be the logistic function. We use the particular quasi-maximum-likelihood method based on the Bernoulli log-likelihood function proposed by Papke and Wooldridge (1996), which is consistent und asymptotically normal regardless of the true distribution of $\textit{turnout}_i$ on z_i given that $E(\textit{turnout}_i | z_i)$ is correctly specified. This quasi-parametric approach does not rely on the specification of the full distribution of $f(\textit{turnout}_i | z_i, \pi)$.

In order to test the hypotheses stated above we employ both estimation procedures but rest our interpretation primarily on the QML-results. We do so because there is some evidence that even if the beta assumption is valid the ML approach only outperforms the QML-estimator under certain circumstances (Ramalho and Ramalho 2010). The beta-regression results are given in the appendix.

6 Results

We estimate the model specified in Equation (1) using the QML-procedure discussed above. The results are provided in Table 4. We get quite similar results using the beta-regression model which are given in the appendix.

The r-squared depicted at the bottom of Table 4 is defined as the explained sum of squares of turnout divided by its total sum of squares based on the unweighted residuals and indicates the high explanatory power of our model. In order to test the crucial assumption that the conditional mean is correctly specified we perform a linktest. We cannot reject the Null hypothesis of a correctly specified conditional mean function with a p-value of 0.680.

To begin with we refer to the weak and the strong hypotheses stated above. The significant effects of the dummy variables indicate that the observed institutional setting at the local level has a strong impact on voter turnout. Furthermore, the estimated coefficients show the negative and the positive signs as stated in the strong hypothesis. We also calculate marginal effects at the sample mean in order to assess the magnitude of the institutional setting on voter turnout. As can be seen in the fourth column in Table 4, shifting the institutional setting of a municipality from type B to type A while keeping all other explanatory variables at their sample mean would reduce voter turnout by about 5.5%. On the contrary, a shift to the institutional setting of type C would increase the voter turnout by about 3.4%.

Regarding the included control variables, the results are in line with previous studies. We find a very weak affect of size and population density which proxies more urbanized areas shows the expected negative sign. Furthermore, education seems to be an important determinant for voter turnout. Somewhat surprisingly, the longterm unemploymentrate turns out to have a substantial positive impact on voter turnout, which underpins the hypothesis of organized interests and contradicts the sometimes stated lack of participation among this group. This important issue should be the subject of further research. Finally, except for the included dummy variables all other control variables are not significantly different from zero.

The dummy variables at the bottom of Table 4 are as expected and reflect the positive effect of concurrent state-elections and the ongoing skepticism about political parties in the former socialist eastern part of Germany. Yet, one result deserves a closer investigation. The negative sign of the dummy variable indicating a concurrent EU-election actually contradicts the economic theory stating that concurrent elections increase the benefit of voting. However, in our dataset the generated EU-dummy also captures a time effect since in our sample all local elections in 2004 took place at the same time as the EU-election (see Table 2). Hence, we cannot separate this time effect from the effect of the EU-election.

Table 4:
QML-estimation results

variable	parameter estimates			marginal effects	
	coefficient	std. error	P> z	dy/dx	std. error
<i>Dummy_typeA</i>	-0.2222	0.0134	0.000	-0.0550	0.0033
<i>Dummy_typeC</i>	0.1402	0.0356	0.000	0.0347	0.0088
<i>Population</i>	0.0000	0.0000	0.000	0.0000	0.0000
<i>Population Density</i>	-0.0001	0.0000	0.006	0.0000	0.0000
<i>Population Mobility</i>	-0.1291	0.1716	0.452	-0.0320	0.0425
<i>HHI_age</i>	1.9653	2.0253	0.332	0.4866	0.5014
<i>Unemployment</i>	0.4186	0.0935	0.000	0.1036	0.0231
<i>Education_high</i>	-0.0901	0.3443	0.794	-0.0223	0.0852
<i>Education_low</i>	-2.1212	0.4505	0.000	-0.5252	0.1116
<i>Dummy_EU</i>	-0.2775	0.0235	0.000	-0.0687	0.0058
<i>Dummy_state</i>	0.4947	0.0224	0.000	0.1225	0.0055
<i>Dummy_east</i>	-0.3616	0.0245	0.000	-0.0895	0.0061
<i>Dummy_RP</i>	0.2790	0.0422	0.000	0.0691	0.0105
<i>Dummy_BW</i>	0.2411	0.0308	0.000	0.0597	0.0076
<i>Dummy_MV</i>	0.1592	0.0251	0.000	0.0394	0.0062
<i>constant</i>	0.5481	0.1460	0.000	-	-
R^2		0.6250			
<i>Number of Observations</i>		1661			

Source: Calculations by the authors.

7 Conclusion

Apart from the rules of voting, the impact of local institutions on voter turnout has been widely ignored in empirical research. Our paper is to shed light on that issue. We show the diversity of local institutions in Germany and distinguish three main types of institutional arrangements on the local level. We argue that the differences between these institutional settings regarding the distribution of competences affects the complexity of the voting decision and hence voter turnout.

We derive two hypotheses regarding the impact of local institutions on voter turnout and test them using a dataset on local elections in Germany. Furthermore, we employ a Quasi-Maximum-Likelihood approach proposed by Papke/Wooldrige in order to deal with the specific problems of fractional response variables. We find strong empirical evidence for the impact of local institutions on voter turnout. As stated in our theoretical discussion, besides the mere existence of different administrative levels the optimal distribution of competences between them increases turnout significantly.

Finally, our inquiry shows that regarding the reform of local government it is important to take the impact on turnout into consideration. To ignore this effect and to purely focus on efficiency in producing of local public goods and services at the local level may lead to a lack of allocative efficiency in the long run.

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Appendix

Table A:
Beta-regression results

variable	parameter estimates			marginal effects	
	coefficient	std. error	P> z	dy/dx	std. error
<i>Dummy_typeA</i>	-0.2218	0.0134	0.000	-0.0549	0.0034
<i>Dummy_typeC</i>	0.1393	0.0400	0.000	0.0343	0.0097
<i>Population</i>	0.0000	0.0000	0.000	0.0000	0.0000
<i>Population Density</i>	-0.0001	0.0000	0.000	0.0000	0.0000
<i>Population Mobility</i>	-0.1365	0.1858	0.463	-0.0338	0.0460
<i>HHI_age</i>	1.9624	1.9838	0.323	0.4512	0.3871
<i>Unemployment</i>	0.4171	0.1066	0.000	0.1029	0.0261
<i>Education_high</i>	-0.0964	0.2916	0.741	-0.0239	0.0722
<i>Education_low</i>	-2.1292	0.2741	0.000	-0.4836	0.0524
<i>Dummy_EU</i>	-0.2782	0.0224	0.000	-0.0682	0.0056
<i>Dummy_state</i>	0.4950	0.0210	0.000	0.1191	0.0048
<i>Dummy_east</i>	-0.3606	0.0233	0.000	-0.0891	0.0058
<i>Dummy_RP</i>	0.2806	0.0447	0.000	0.0685	0.0106
<i>Dummy_BW</i>	0.2423	0.0294	0.000	0.0596	0.0071
<i>Dummy_MV</i>	0.1600	0.0232	0.000	0.0393	0.0056
<i>constant</i>	0.5493	0.1428	0.000	-	-
<i>phi</i>	94.1545	3.2503	-	--	-
R^2	0.6250				
<i>Number of Observations</i>	1661				

Source: Calculations by the authors.