HEALTH POLICY

Social democratic government and spatial distribution of health care facilities

The case of hospital beds in Germany

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Background: In this paper, the hypothesis that the spatial distribution of hospital beds is more even in countries with socialist or social democratic governments than in countries with conservative or Christian democratic governments was tested. To avoid the confounding influences of historical and institutional differences between countries, we used the Federal Republic of Germany as a case study. The German federal states have their own governments who play an important role in creating structures for the planning of hospital facilities.

Methods: The test of the hypothesis was largely quantitative. At the level of federal states the rank correlation was computed between the weighted number of years of left-wing government participation and the coefficient of variation in the number of hospital beds per 1000 inhabitants. In addition to this, the hospital plans of two federal states were studied.

Results: The hypothesis was supported by the data, showing a positive association between the number of years of left-wing government participation and regional variation in the number of hospital beds. A comparison of the hospital plans of two contrasting federal states showed less government interference in hospital planning in the state with a tradition of right-wing government.

Conclusion: There seems to be a relation between left-wing government participation in West German states and a more equal distribution of the number of hospital beds per 1,000 inhabitants.

Keywords: Germany, hospital beds, politics, regional disparities

A more or less universal goal of health care policy is to attain equal access to health care facilities for all members of society. It was one of the instruments for reaching the well-known ideal of Health for All – the WHO-strategy for the year 2000. Although health for all is difficult to attain, health care for all is a goal which can more directly be influenced by government policy. Governments differ in the value they attribute to equal access to resources which enhance people’s life chances. A systematic difference is the one between social democratic governments and conservative or Christian democratic governments. The policies of the former are more likely to aim at equal access to and equal distribution of life chances for all.

Although the 'welfare state' is the joint product of governments and government coalitions of different composition, the comparative analysis of welfare state politics shows that the political participation of social democratic parties influences political outcomes. In this article we test the hypothesis that politics matter for the field of health care by analysing the spatial distribution of one kind of health care facilities, namely hospital beds.

In the sociology of inequality and social stratification there is a long tradition of research into the relation between sociopolitical contexts and the distribution of life chances such as income, educational opportunities and occupational status positions. Empirical research into this relation has shown that indicators of the political composition of governments are correlated to the income distribution in Western industrial societies. Left-wing political participation has a weak positive relationship to the income share of the lowest 20% of the income distribution (depending on the indicators used, varying between no relationship to a positive relationship). Left-wing politics have a negative relationship to the share of the highest 20% of the distribution.

Comparative studies in economic geography have emphasized government influence on regional economic development and employment opportunities. Government influence has changed in the course of time from direct redistributive measures (e.g. the relocation of government services to peripheral regions) towards indirect incentives for innovative industries. Smith hypothesised that health care systems of countries which are governed by social democratic or socialist parties will show a more even spatial distribution of health care facilities and manpower. However, he did not test this hypothesis empirically.
HYPOTHESES

The question to be answered in this article is as follows. Is the spatial distribution of health care facilities indeed more even in states with a social democratic or socialist government compared to states with a Christian democratic or conservative government?

In answering this question, the duration of left-wing government has to be taken into account. Changing the spatial distribution of health care facilities takes a lot of time, so there is a time-lag between the coming to power of a government and the effects on the distribution of health care facilities. Therefore, it is hypothesised that the expected effect on the spatial distribution of health care facilities will be stronger the longer social democratic or socialist parties have been in power.

The spatial distribution of health care facilities will also be influenced by other factors such as the carrying capacity, in terms of population density and economic prosperity and the age distribution of the population. These are not treated as confounding variables, but incorporated in substantial hypotheses. Although population density and economic prosperity in general will be related to the availability of health care, we hypothesise that the efforts of left-wing governments result in a weaker relation between the carrying capacity of a region and the availability of health care. However, with regard to age of the population, we hypothesise that the efforts of left-wing governments result in a stronger relation between the percentage of elderly in a region and the availability of health care facilities.

The mechanism which is responsible for a more even distribution of health care facilities is assumed to be health care planning. We therefore expect states with left-wing governments to rely more on planning in (re)distributing health care facilities than right-wing governments.

To test the hypotheses developed above, a large number of health care systems were studied cross-sectionally so as to have enough variation in government composition and other conditions relevant to the spatial distribution of health care. However, it is very difficult and time-consuming to collect regional data on health care facilities and manpower for a large sample of countries. The size of the sample is important because of the historical heterogeneity of health care systems. In a parallel study, a selection of European countries (12) was studied. We found some support for the hypothesis as to the influence of the political colour of governments, particularly in the decrease in regional variation of health care supply. In the present article we have tried to control for differences in institutional structure and the history of health care systems by restricting the analysis to states within a federal structure, in this case the federal states of former West Germany, the so-called Bundesländer. Although their number is small, they share one institutional and political context and the basic outline of the health care system is the same. The Bundesländer have been governed by different coalitions during the past decades.

An assumption underlying the central hypothesis was that the governments of the German states develop their own policy concerning the number and distribution of hospital facilities. Moreover, it was assumed that this policy varies with the political colour of the states.

German federal states do indeed have considerable freedom in developing their own policies, e.g. in the field of hospital planning. Federal states are obliged to develop periodical hospital plans. In these plans the capacity in terms of the number of hospitals and hospital beds needed is fixed by the federal states. Hospital plans underlie the decision to subsidise individual hospitals. These are state aided when the number of beds fits in with the planned capacity for the federal state. This means that federal states indeed have a potentially great influence on the distribution of hospital beds.

As a consequence, we expected that planning procedures will differ between states with clearly different histories of political coalitions. It was therefore hypothesised that the government in a left-wing state, such as Hessen, would interfere more than in a right-wing state like Bayern.

METHODS

Data

Former West Germany consisted of 11 federal states. Three of them were city states, hence their spatial distribution of health care is of a different quality compared with the other states. The remaining eight states are administratively divided into Kreise or districts and data on demographics, economic prosperity and numbers of hospitals and beds were available at this level for the year 1994. In these data economic prosperity was defined as gross product value per 1,000 inhabitants and population density as the number of inhabitants per square kilometre. The data were collected by the Statistisches Bundesamt and are available on disk. For further definitions we refer to this source.

To explore the validity of the hypothesis about planning as the mechanism which contributes to a more equal distribution of hospital beds, the hospital plans of two states which clearly differ in their independent variables were studied. The hospital plans of Bayern (1992) and Hessen (1993) were selected for this exploratory part of the study. We used the hospital plan of Bayern instead of Rheinland Pfalz even though the latter had a higher (weighted) number of years of right-wing government, because it had a coalition government in the 1990s, which made it impossible to exclude the influence of left-wing parties.

Political composition of governments

Political parties were classified as either left or right and government participation was counted in years. Left-wing parties: die Grünen, Kommunistische Partei Deutschlands (KPD), Sozialdemokratische Partei Deutschlands (SPD) and Sozialdemokratische Partei Saar (SPS). Right-wing parties: Block der Heimatvertriebenen und Entrechteten (BHE), Bayernpartei (BP), Christliche Demokratische Union Deutschlands (CDU), Christliche...
Political composition was measured by years of government participation of left-wing parties over the period 1949–1991. Both governments consisting of either right- or left-wing parties occurred, as well as coalition governments. To account for the different influence of purely left-wing governments versus coalition governments, years were counted fully when only left-wing parties governed and half counted when left- and right-wing parties formed a coalition government. This resulted in the variable weighted number of years of left-wing government participation.

Spatial distribution of hospital beds
The data set contained data on all beds in general and university hospitals, day and night clinics for psychiatry and neurology and military hospitals combined. We would have preferred general hospital bed data only, because these are included in the state hospital plans. However, they accounted for 90% of all beds in the data set. Differences between states in the equality of spatial distribution of hospital beds were measured by the coefficient of variation computed over the number of beds per 1,000 population per district. The coefficient of variation is a measure of relative variation and defined as the standard deviation divided by the mean. As applied to our subject, the spatial distribution of the hospital beds within a state was defined as the standard deviation of the number of hospital beds per 1,000 inhabitants per district divided by the average number of hospital beds per 1,000 inhabitants in that state. Cities which were completely surrounded by one rural region were merged to one region. Apart from this, we did not correct for boundary crossing hospital use.

Carrying capacity of regions
The ability of regions to support a certain number of health care facilities or the carrying capacity was indicated by two separate variables, i.e. population density and economic prosperity. More urban and more prosperous regions were assumed to be able to support more health care facilities, i.e. more hospital beds per 1,000 inhabitants.

Analysis
The test of the hypothesis was largely quantitative. As a first step, the rank correlation between the weighted number of years of left-wing government participation and the coefficient of variation of the number of hospital beds per 1,000 inhabitants was computed at the level of federal states. Secondly, the number of hospital beds per 1,000 inhabitants at the district level was correlated with population density and economic prosperity (product moment correlation) for each state. The correlation coefficients of each state were then rank correlated to the weighted number of years of left-wing government.

In addition, the hospital plans of two German federal states were studied with the aim of shedding light on hospital planning as the possible mechanism which connects the political colour of a government and the spatial distribution of hospital beds. To test this idea, the hospital plans of Hessen and Bayern, two states with different political colour, were studied.

RESULTS
The relationship between left-wing government and distribution of hospital beds
Spearman’s rank correlation between left-wing government participation (longest participation is rank order 1) and variation in hospital beds was 0.86 (Table 1). This corresponded with the basic hypothesis as to the influence of left-wing politics on the distribution of health care. It was hypothesised that the carrying capacity of regions is related to the availability of health care and that this relation becomes weaker the longer a left-wing government is in power. Spearman’s rank correlation between left-wing government and the correlation between population density and hospital beds contradicted the hypothesis ($r_s = 0.33$) while Spearman’s $r$ with the correlation between economic prosperity and hospital beds did not contradict the hypothesis ($r_s = 0.64$) (Table 2). The
correlation between economic prosperity in a region and the number of hospital beds per 1,000 tended to be weaker in states with a longer history of left-wing government. The contradiction in the case of population density seemed to be related to the position of Bayern. The correlation between population density in a region and the number of hospital beds per 1,000 inhabitants was much lower in the state of Bayern than in the other states. When we successively left out one state and again computed the rank correlation, the rank correlations varied between 0.07 and 0.32 with Bayern included and one of the other states left out versus 0.79 with Bayern excluded. This points to the conclusion that, with the exception of Bayern, the correlation between population density and the number of hospital beds per 1,000 inhabitants per region tends to be weaker the longer left-wing parties have been in power.

With regard to the percentage of elderly, it was hypothesised that the relation to the availability of health care facilities would be stronger in states with left-wing governments. This hypothesis was rejected ($r = -0.19$). The explanation for this contradictory finding is that the assumption underlying the hypothesis seems to be wrong. Left-wing governments were expected to take more account of the need for hospital beds by the elderly. However, right-wing governments turned out to be as much alive to the needs of the elderly.

The mechanism of planning of hospital facilities

The hospital plans of Hessen and Bayern had in common the fact that they were based on the application of federal law. They both distinguished a hierarchy of hospitals with different levels of services and included the same formula for calculating the number of beds needed. However, the general part of Bayern's 1992 hospital plan was a mere six pages, while Hessen's 1993 edition of the hospital plan took up 131 pages in the general part. The hospital plans showed that the government of Hessen contributed substantially to the planning of hospital beds by formulating conditions and restrictions. Hospital planning in Hessen was a process at different levels and involved different actors, including the state government.

All actors had different responsibilities with the obligation to consult each other extensively. This is illustrated by the following quotation (this and the following citations were translated from German by the authors) from Hessen's 1993 hospital plan:

- The mutual cooperation of the legally required planning committees as well as cooperation with the state is not regulated in detail in the law; and in this respect further regulation is necessary (p. 22).
- The final responsibility for the result of hospital planning is with the state but the complex formation of opinions at two different levels in making up the hospital plan has to result in one state hospital plan (p. 23).

Apparently, the planning procedure had become more complex in recent years:
- Against the earlier more global planning approach, the Ministry of Social Affairs has decided to base the third edition of the Hessen hospital plan on a more elaborate and thus more complicated method (p. 25).

In contrast, Bayern left the planning of hospital beds to a far greater extent to the parties involved in health care or to the market. Hospital planning was much less regulated by state government and left more to the regional authorities, the hospitals themselves and to the market.

The following quotations clearly show the differences with the approach to hospital planning in Hessen:
- The hospital plan should ... provide the conditions for hospitals to assure their services in efficient departments by mutual cooperation and division of tasks (p. 5).
- This locational planning is based on the explicit aim to interfere as little as possible in the planning sovereignty of the responsible hospital organisations. The planning of separate services is the responsibility of the hospital organisation (p. 9).
- This hospital plan does not aim to regulate the internal structure of hospitals. Such state dirigism would hamper the typical internal developments of specific hospitals and unnecessarily restrict the discretion of public, non-profit and private hospital organisations (p. 9).

In conclusion, the ways in which the hospital plans were formulated in these two states, with more state inter-

Table 2 Rank order of weighted number of years of left-wing government participation and of the correlation between population density and economic prosperity and percentage of elderly and number of hospital beds per 1,000 inhabitants per German state

<table>
<thead>
<tr>
<th>State</th>
<th>Participation in left-wing government</th>
<th>Population density and beds</th>
<th>Prosperity and beds</th>
<th>% elderly and beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schleswig-Holstein</td>
<td>Rank 6</td>
<td>Correlation 0.78 Rank 8</td>
<td>Correlation 0.77 Rank 8</td>
<td>0.46 Rank 3</td>
</tr>
<tr>
<td>Niedersachsen</td>
<td>Rank 3</td>
<td>Correlation 0.53 Rank 6</td>
<td>Correlation 0.48 Rank 2</td>
<td>0.23 Rank 8</td>
</tr>
<tr>
<td>Nordrhein-Westfalen</td>
<td>Rank 2</td>
<td>Correlation 0.38 Rank 2</td>
<td>Correlation 0.33 Rank 1</td>
<td>0.38 Rank 5</td>
</tr>
<tr>
<td>Hessen</td>
<td>Rank 1</td>
<td>Correlation 0.43 Rank 3</td>
<td>Correlation 0.49 Rank 3</td>
<td>0.42 Rank 4</td>
</tr>
<tr>
<td>Rheinland-Pfalz</td>
<td>Rank 8</td>
<td>Correlation 0.61 Rank 7</td>
<td>Correlation 0.65 Rank 5</td>
<td>0.32 Rank 6</td>
</tr>
<tr>
<td>Baden-Wuerttemberg</td>
<td>Rank 5</td>
<td>Correlation 0.48 Rank 4</td>
<td>Correlation 0.51 Rank 4</td>
<td>0.24 Rank 7</td>
</tr>
<tr>
<td>Bayern</td>
<td>Rank 7</td>
<td>Correlation 0.17 Rank 1</td>
<td>Correlation 0.72 Rank 6</td>
<td>0.77 Rank 1</td>
</tr>
<tr>
<td>Saarland</td>
<td>Rank 4</td>
<td>Correlation 0.49 Rank 5</td>
<td>Correlation 0.76 Rank 7</td>
<td>0.53 Rank 2</td>
</tr>
</tbody>
</table>

$r = 0.19$

$r = 0.64$

$r = -0.19$
vention in Hessen and less in Bayern, indeed indicate the predicted approach to hospital planning.

DISCUSSION

The analysis presented in this article fits in with the tradition of sociological research into inequality and social stratification which poses questions as to the influence of sociopolitical systems on the distribution of life chances. We have now dealt with a comparable question for the spatial distribution of health care facilities. In modern society health care can be seen as a good merit, i.e. people have a right to health care and governments have an obligation to make health care accessible. However, as can be observed in the literature, health care facilities and manpower are not evenly distributed in a spatial sense.

A first test in a parallel study, which included 12 European countries, supported the hypothesis that left-wing government participation coincides with an increasing spatial equality of health care facilities. The conclusion of the current study is that there seems to be a relation between left-wing government participation in West German states and a more equal distribution of the number of hospital beds per 1,000 inhabitants. However, the result of the quantitative part of the study indicated that the situation in Bayern is different. We have found no explanation for this anomaly.

A limitation of this study was that cross-border use between districts and states was not taken into account. In particular the three city states might attract patients from surrounding districts.

Changing the spatial distribution of health care facilities takes time and it is usually easier to add new facilities to change the distribution than to close down existing facilities. This implies that there is a time-lag between the coming to power of social democratic or socialist parties and the effects on the distribution of health care facilities. We therefore looked at government participation over a longer period of time. This time-lag is probably shorter in times of economic growth than in times of economic recession. In times of economic growth it is possible to change the distribution by adding new facilities, while in times of recession the distribution changes through existing facilities being closed down, either as a result of deliberate policy or by the 'natural lifecycle' of facilities.

A question open to debate is whether social democratic and socialist governments actually develop and try to impose policies aimed at a more equal distribution of health care facilities and manpower. It may be argued that the constituencies of social democratic parties mainly reside in urban areas. Based on rational political behaviour one might expect that social democrats would try to influence the spatial distribution of health care facilities in favour of urban areas. However, hospitals are usually not located in the most rural areas and the units used in this study, the Kreise, usually contain a more urbanised core and surrounding countryside. Besides this, there is another reason why we assumed that social democrats strive for a more equal distribution of health care facilities. Although the more strongly urbanised areas might have a larger social democratic constituency, the ideology of equality in social democratic politics might counteract this.

The hospital plans of two federal states lend some support to the hypothesis that the approach to hospital planning differs between states. However, this analysis of the hospital plans was only done for two states and was of an explorative nature. To come up with closely reasoned arguments for the expected differences in the planning processes, a more systematic review of a number of hospital plans from different states is needed. The analysis of actual policies is also important in determining whether policy aims not only at equal distribution, but also at equal access. Redistributive policy might aim at over-compensating regions with a more unfavourable age composition of the population and with higher levels of morbidity and/or mortality (compare e.g. the Resource Allocating Working Party formula of the British NHS), that is regions where social and spatial inequality coincide.

However, governments have limited resources and conflicting priorities. It is basically an empirical question, to be solved by further policy analysis, to what extent these kinds of policies have been advocated. It could be hypothesised that social democratic or socialist governments give priority to the health care sector second to the economic sector. Hence, developments in the economic sector are again of importance.

As for the possibilities of realising policies aiming at a more equal distribution of health care facilities and manpower, we point to the relative power base of the parties involved in health care. Although at least partly the product of earlier policies, in social insurance-based health care systems the possibilities of change are less than in more centralised health care systems. Centralised health care systems are characterised by one central base of power, such as the NHS in the UK, while in social insurance-based health care systems power is divided between the state, professional organisations and health insurance bodies, both public and private. This is the situation in Germany. Both groups of health care systems differ in the basic system of financing health care and regional redistribution (tax based versus premia based).

The support for the article's hypothesis about the influence of left-wing policy on spatial disparities in health care supply makes it worthwhile extending the analysis to also include the former German Democratic Republic and, in particular, investigating longitudinal changes in the neue Länder.

Special attention should be paid to the tendency for deregulation of the hospital sector in European countries. Contemporary social democratic governments are inclined to be less and less involved in the planning of health care facilities and to leave the planning to the market. This could imply a weaker relation between social democratic government participation and the distribution of health care facilities and probably a less even distribution of facilities in the long run.
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