Slavtchev, Viktor; Noseleit, Florian

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Universities' foundation and regional development

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Universities' Foundation and Regional Development

Florian Noseleit

Friedrich-Schiller-University Jena
School of Economics and Business Administration
Carl-Zeiss-Str. 3
D-07743 Jena
Phone: ++49 (0) 3641 943 226
florian.noseleit@uni-jena.de

Viktor Slavtchev

Friedrich-Schiller-University Jena
School of Economics and Business Administration
Carl-Zeiss-Str. 3
D-07743 Jena
Phone: ++49 (0) 3641 943 223
viktor.slavtchev@uni-jena.de

Abstract

This study addresses the question if universities are able to stimulate regional development. To assess the impact of universities on regional development we make use of information about the foundation of universities in West Germany since 1975. We find empirical evidence that the foundation of new universities and technical colleges has a positive impact on private employment, particularly highly qualified people and employment in high-tech manufacturing industry and knowledge intensive services. Furthermore, we find evidence for a positive impact of universities and technical colleges on the start-up activity in knowledge intensive services.

JEL classification:

Keywords: structural change, regional development, universities

Introduction

Universities are assumed to stimulate regional development. Universities generate new technological knowledge and opportunities that stimulate the innovative performance of local industry (Jaffe 1989; Acs et al. 1992). In a more systemic view of regional innovation, Graf (2010) shows that universities, through their pronounced degree of interregional linkages, may absorb globally generated knowledge and circulate it regionally, thereby reducing the risk of regional technological lock-in (Grabher 1993; Bathelt et al. 2004). Moreover, the new technological knowledge and opportunities may create new technological pathways that cause new industries to emerge and to grow. As a result, the spatial and temporal evolution of new industries, particularly knowledge intensive ones, is likely to be related to public research. In fact, Zucker et al. (1998) and Audretsch and Stephan (1996) show that the intellectual human capital that flourishes at universities is the main determinant of where and when the American biotechnology industry emerged and developed. Similarly, Abramovsky et al. (2007) and Adams (2002) provide evidence that industrial R&D tend to disproportionately locate near to relevant university research. Based on such empirical evidence, policy makers and regional planners increasingly consider universities as a local advantage and as a mean to stimulate the development of regions, particularly of poorly performing ones.

Against this background, this paper analyzes the impact of the foundation of universities between 1975 and 2002 on regional development in West Germany. There is no doubt that the new academic knowledge and technologies create new opportunities and technological pathways which impact local economic development in various ways, however, in this study particular attention is paid on the development of high-tech and knowledge intensive industries. Given the complex interactions between universities and their environment, several distinct measures for regional development are applied. First, we assess the impact of a university foundation on regional employment, particularly in both high-tech and knowledge intensive industries. Second, we investigate the impact of universities and technical colleges on the local start-up rate in high-tech and knowledge intensive industries.

To empirically assess the impact of university's foundation on local economic development fixed effects estimator is applied. In a panel setting, the fixed effect estimator is largely equivalent to the difference-in-difference estimator, except that it different the means of the same units over time. The reason for using fixed effects estimator is that we have many time periods and arbitrary treatment pattern - universities are not founded at the same point in time but rather in different periods and we are interested in the impact of university's foundation in

all subsequent periods. The results provide robust evidence that the foundation of universities and technical colleges benefits employment in high-tech and knowledge intensive industries, while we do not find evidence for the impact of university foundation on total employment. Regarding start-up activities, we find evidence for the impact of university foundation on total start-ups activities. However, the results suggest that the total effect is rather due to start-up activities in high-tech and knowledge intensive industries. Overall, the results suggest that the foundation of a new university is related to a shift in the local economy towards more high-tech and knowledge intensive industries.

The study if organized as follows. Section two presents the empirical strategy applied in order to assess the impact of universities' foundation on regional development. Section three elaborates on the foundation of universities in Germany – major motives and choice of location. Section four introduces the data and the variables. Section five presents the results of the empirical analysis. Section six concludes.

Empirical strategy

We apply a difference-in-difference approach to assess the impact of university's foundation on regional development. The simplest version of a difference-in-difference approach is one where the outcomes are observed for different regions for two time periods. Some of the regions are exposed to a treatment (foundation of a university) in the second period but not in the first, while other regions are not exposed to the treatment during either period (control group). A simple model to assess the impact of a foundation of university is

$$y_{it} = \alpha_i + \eta d2_t + \rho D_{it} + \varepsilon_{it}\ ,\ t=1,2\ , \tag{1}$$

where y_{it} is the outcome of interest in region i and time t, D_{it} is a binary treatment indicator, $d2$=1 if t=2 and zero otherwise, α_i is unit specific effect, and ε_{it} are the idiosyncratic errors. The coefficient ρ is the treatment effect. A simple estimation procedure is to take the first differences of the both side of equation (1) to remove α_i:

$$(y_{i2} - y_{i1}) = \eta + \rho\ (D_{i2} - D_{i1}) + (\varepsilon_{i2} - \varepsilon_{i1}). \tag{2}$$

If $Cov(\Delta D_i, \Delta\varepsilon_i) = 0$, that is, the change in treatment status is uncorrelated with changes in the idiosyncratic errors, then applying OLS to equation (2) yields consistent results. The leading case is when $D_{i1} = 0$ for all i, so that no units were exposed to the treatment in the initial time period. Then the OLS estimator is

(3) $$\hat{\rho} = \Delta\bar{y}_{TREATED} - \Delta\bar{y}_{NON-TREATED},$$

which is a difference-in-differences estimate except that we take the difference of the means of the same units over time.

However, in our case universities are not founded at the same point in time but rather in different periods and we are interested in the impact of university's foundation in all subsequent periods. With many time periods and arbitrary treatment pattern, we can write the equation

(4) $$y_{it} = \alpha_i + \lambda_t + \rho D_{it} + X'_{it}\beta + \varepsilon_{it}, \; t=1,\ldots,T,$$

where D_{it} is the treatment indicator, α_i is unobserved unit specific time invariant effect, λ_t is year effect, X_{it} is a vector of further control variables.

Treating the unobserved unit specific time invariant effects and the aggregate time effects as parameters to be estimated is algebraically the same as estimation of the deviations from the mean of the same unit over time:

(5) $$\bar{y}_i = \alpha_i + \bar{\lambda} + \rho\bar{D}_i + \bar{\mathrm{X}}_i'\beta + \bar{\varepsilon}_i.$$

Subtracting equation (6) this from equation (5) gives

(6) $$\left(y_{it} - \bar{y}_i\right) = \left(\lambda_t - \bar{\lambda}\right) + \rho\left(D_{it} - \bar{D}_i\right) + \left(X_{it} - \bar{\mathrm{X}}_i\right)'\beta + \left(\varepsilon_{it} - \bar{\varepsilon}_i\right),$$

so deviation from means kills the unobserved unit specific time invariant effects.

A standard approach to remove α_i is using fixed effects (FE) estimator. FE is consistent, provided the treatment indicator, D_{it}, is strictly exogenous; correlation beween D_{it} and ε_{ir} for any t and i causes inconsistency. The assumption of strict exogeneity might not hold true if treatment is a reaction to past outcomes on y_{it}. In cases where $D_{it} = 1$ whenever $D_{ir} = 1$ for $r < t$, strict exogeneity is usually a reasonable assumption.

Universities' foundation in Germany and exogeneity of treatment

The validity of the estimation of the impact of the creation of new universities on local economic development depends crucially on the exogeneity of the treatment. As the foundation of public universities might be related to policy considerations about future development (of regions) it is essential to discuss to which degree decisions about university foundation is related to region specific characteristics. Hence, in this section we discuss the process of where and when to create new university.

The West German university landscape is a rather modern phenomenon. Apart from the traditional universities some of which can be traced back to medieval time, a significant part of the universities that exist today in West Germany are comparably new founded after the WWII. The reason for this some particularities is the German history.

At the beginning of the industrial revolution several universities have been created mainly in the Southern Germany and in Prussia, while universities were still missing in larger parts of the country. Particularly, Emperor Wilhelm II feared the "free spirit" educated at universities in areas where Prussia has less influence and control. During the WWI creation of universities was hardly possible. Later on, the Nazi dictatorship was less inclined towards the creation of universities, at which freethinking and intellectual human capital flourish. After the WWII, highest priority for the Allied was the support of the ruined economy and the installation of a stable political system. The creation of new universities started in the late 1950s' and early 1960s', whereas the Federal States (*Laender*) freely decide about where and when to found a new university.

The criteria typically applied for the decision where and when to locate a new university were to create educational possibilities which are equally distributed in space and to prevent overcrowding of existing universities due to increasing demand for tertiary education. Hence, mainly regions have been considered which did not have universities at that time. The final location decision was quite complex, subject to a large number of different factors. However, unlike the prevalent view, the foundation of new universities can not be considered a typical reaction to structural change. Of course, positive effects on regional development were appreciated, however, it was not the case that the foundation of a university in a particular region was considered direct instrument to stimulate that region. Rather, in some cases, creation of university has been aimed for a very long time but was not possible for a number of reasons that were not related to contemporaneous regional specific characteristics. In other case, there were political interests that determine the foundation of new universities.

One example is the University of Flensburg located in the Federal State of Schleswig-Holstein in the north of Germany at the Danish border. The city of Flensburg strived to found a university already before the Thirty Years' War from 1618 to 1648. However, the city of Flensburg was heavily impacted by the war, which set the plans to an end. In 1652 the emperor of the Holy Roman Empire allowed the Duke of Schleswig-Holstein-Gottdorf to establish a university and the city of Flensburg negotiated with the Duke to place the university there. However, since the Duchy of Schleswig (where Flensburg is located) was

only a Danish fief, therefore not a part of the Holy Roman Empire, locating the University in Flensburg was not possible. Instead, a new university was founded in the city of Kiel which was ruled by the Duke of Schleswig-Holstein-Gottdorf, but was located within the borders of the Holy Roman Empire. For a very long time residents of Schleswig-Holstein could study either at the University of Kiel or at the University of Hamburg. When Schleswig-Holstein decided to establish a new university Flensburg became the natural choice.

Other examples are the foundations of the universities of Bochum and Dortmund both, located in the Federal State of North Rhine-Westphalia. By end of the WWI, the supply of universities in North Rhine-Westphalia, the most populous Federal State in Germany, was limited to Aachen, Bonn, Cologne and Muenster and further universities were eagerly demanded. There were efforts of local authorities to establish to new universities in the area, but the Prussian government opposed the local efforts. In 1960 the administration of the Federal State of North Rhine-Westphalia decided to create a university. The committee of the state parliament which was responsible for the creation of the new university recommended Dortmund as a location for the new university. There were two key arguments for creating the new university in Dortmund. First, there were efforts by the city of Dortmund to create a new university dating back to 1897. The second argument was the reduction of the number of student at already existing universities in North Rhine-Westphalia. In this respect, Dortmund appeared reasonable choice due to its advantageous geographical location and the comparably easy accessibility of the city. However, at the same time there were close negotiations between the ruling party and the city of Bochum. Quite surprisingly, in spite of recommendation of the parliament committee, the state government decided in favor of Bochum and the city became the university in 1962. The decision in favor of Bochum was motivated, besides the availability of building area, mainly by party- and power-political interests. This resulted in fierce protest by the public, the opposition party and the city of Dortmund, particularly by the city council. This protest forced the government of the Federal State of North Rhine-Westphalia to create another university and Dortmund became it in 1968.

Similar is the history of the University of Augsburg in Bavaria. The local efforts to establish a university in Augsburg date back long before the actual creation of the university. The Dean of the Department of Law at the German Karls-University of Prague handed in 1949 the Mayor of Augsburg “Memorandum for rebuilding of the Law and Philosophy Department at the German Karls-University of Prague in Augsburg” out. In the same year, further efforts for the establishment of a university were taken by the Adalbert-Stifter-Society and the Academy

of Augsburg. That Augsburg will become a university was almost taken for granted. However, suddenly, these efforts were refused by the Karls-University of Prague. The initiative in Augsburg lost support among the circles at the Karls-University of Prague which decided in favor of establishing a new university in Regensburg (Bavaria). The creation of the University of Augsburg in 1970 was possible only because of change of the goals of the university policy of the Federal State of Bavaria towards the promotion of geographically equally distributed educational possibilities.

For the same reason and in order to release existing universities from the increasing demand for tertiary education, the University of Bayreuth (1975) and a number of technical colleges (Deggendorf, Hof, Ingolstadt, Amberg-Weiden, all in 1994) were established.

Another example showing that the choice of both, the date of foundation and the location of new universities are (at least partly) independent from contemporaneous regional characteristics, therefore worth considering as exogenous from a regional point of view, is the university of Goslar that was intended but not created. In the late 1990s, the ruling party in the Federal State of Lower-Saxony intended to create a new university in the city of Goslar. The choice of Goslar was politically motivated and accompanied by the fact that the prime minister of the Lower-Saxony was born in Goslar and previous to his career as the Minister-President of Lower-Saxony he was heavily involved in local policy. There were first steps undertaken towards the creation of a university in Goslar and the city council started looking for appropriate area to locate the new university. However, the elections in 2003 led to a change of the ruling party in Lower-Saxony and the new prime minister stopped the creation of a new university in Goslar.

As to the question of exogeneity of treatment, it seems that the decision where and when to create a new university in Germany is quite complex. The anecdotic examples provided in this section suggest that important motivation for the creation of new universities has been to prevent overcrowding of existing universities and to create spatially equally distributed educational possibilities. We were not able to find evidence that new universities tend to be founded in poorly performing regions that have the potential to develop well in the future rather than in poorly performing regions without such perspective. Regarding the choice of date and location for new universities, the examples suggests that there are various sources variation which cannot be directly related to regional characteristics. In some cases the creation of a new university in a particular region has been intended long before the actual event. Such influences should be accounted for by including fixed effects. In other cases, the

choice of date and location for new universities seem to be motivated by political reason that can be considered exogenous.

Another source of bias may arise if the regional actors anticipate the creation of a new university in the region and react to that in a certain way or if actors from other regions relocate. However, the examples of Bochum-Dortmund, Augsburg-Regensburg and Goslar show that the announcement of a university foundation is everything but reliable.

Finally, there is no doubt that not every region is equally suitable as a location of a university. Rather cities and urbanized regions than rural regions are likely to be selected as a location of a new university. We try to control for that by using rather larger spatial units. That is, we use the planning regions (*Raumordnungsregionen*) which consists of one core city and the respective urban catchment area.

Data and variables

Data source

We use data from the Establishment History Panel which is based on official employment statistics provided by the Institute for Employment Research (IAB) of the German Federal Employment Agency. The data contain establishment aggregated data derived from social security statistics that makes this data highly reliable and is available from 1975 onwards. This data is not a random sample but covers the total population of West-German businesses that have at least one employee subject to social security. A considerable advantage of this data is that regional information is included. We use data for West-German regions for the period 1975 to 2002 since this period allows an analysis based on the same industry classification. The unit of observation are 74 West-German planning regions that can be considered as spatial functional units (BBR 2003). Each planning regions consists of a core city and its surrounding, and the functional separation is based on commuter flows. The following sectors of the local economy are excluded from the analysis: agriculture, mining, public services and education. We restrict the data to private industries only in order to assure that the effect of a new university or technical college is not due to changes in the regional employment structure caused by the university itself (e.g. new employees hired by the university). We collected data about new universities and technical colleges for the period 1976 to 2002. Academic institutions such as public administration colleges, colleges of arts, and conservatories are not included because we are interested in the technological dimension

and the role of such universities is not clear (Jaffe 1989; Fischer and Varga 2003; Mueller 2006). We limit the sample to 15 regions, with 12 regions that became a technical college or university between 1976 and 2002 and three regions that did not had any university/technical college in 2002 yet. A list of all regions and further information is documented in table A1 in the appendix.

Dependent variables

Several variables are use to proxy regional development. First, we employ the total number of private sector employees in a region. However, since high-tech and knowledge intensive industries are more likely to benefit from academic knowledge we further employ the number private sector employees with tertiary education, the number of employees in R&D intensive manufacturing industries, as well as the number of employees in knowledge intensive services. We consider employment of high qualified, and employment in high-tech and knowledge intensive industries as more suitable to assess the knowledge impact of new universities as opposite to total employment which is more likely to be influenced by the increase of local market potential. Finally, we use the total number of start-ups, the number of start-ups in R&D intensive manufacturing industries and the number of start-ups in knowledge intensive services as further proxies for regional development.

Treatment

New universities impact on local economy not only in the year of foundation but rather develop their impact over a longer period of time. It is also very unlikely that the University will have a constant effect over time. Rather the new University needs some time integrate into local economy and to unfold their full potential. Therefore we employ the number of years that the university is located in the region as a treatment indicator.

Control variables

Next to the set of region and time fixed effects we consider the regional firm size structure (regional employment shares in large and medium sized firms) and employment density (total employment over area size) as further controls. Furthermore we control for the regional industry structure by including the regional employment shares of 27 out of 28 industries.

Results

Table 1 reports the results of the estimation of the impact of university foundation on regional employment according to equation (6). Columns one and two in Table 1 report results for

overall private sector employment. Column 1 does not include the control variables for the regional industry structure while the results in column 2 include the regional employment shares of 27 out of 28 industries. We do not find a significant positive impact of the foundation of a university on total private employment.

Column three and four presents the results for high qualified workers. The foundation of university is significantly related two the total number of high qualified workers. When controlling for the existing regional industry structure (column 4) the coefficient nearly doubles. We find that the foundation of a university on average increases private employment of high qualified workers by 32 to 62 employees for each year that the university exists.

In column five and six private employment in R&D intensive industries is used as an outcome variable. Although a significant share of employees in these industries has tertiary education this group is by far not the largest. Again our results indicate a significant positive contribution of university foundation to employment in these industries. For every year of existence, employment in R&D intensive industries increases by 100 to 118 employees. Again we find that controlling for the regional industry structure yields a larger coefficient.

Columns seven and eight report the results for employment in knowledge intensive services. Our results hint to a yearly employment contribution of a newly founded university in the range of 96 to 117 workers in knowledge intensive services.

Table 2 reports the results of the estimation of the impact of university foundation on regional start-up activities according to equation (6). In column one our results indicate a positive relationship between university foundation and total start-ups in the region – approximately 11 start-ups per year of university's existence. However, when controlling for the local industry structure the significance level of the treatment variable drops to ten percent level.

Similar to above, we then focus on start-up activity in R&D intensive manufacturing industries and knowledge intensive services since these industries are assumed particularly dependent on academic knowledge. For start-ups in R&D intensive manufacturing industries we find a positive and significant impact of university foundation (columns three and four). As in the case of employment in R&D intensive manufacturing industries, the coefficient of the treatment variable increases when local industry structure is controlled for. For every year of university existence our results indicate between 0.3 to 0.7 additional start-ups in these industries.

The foundation of university is also significantly positive related to start-ups in knowledge intensive services. Here our results suggest on average 7.5 to 8.5 more start-ups. After a time period of 5 years (assuming 8 additional start-ups every year due to the new university) the number of start-ups that can be attributed to the university foundation makes up approximately 1.8 percent of all local businesses in knowledge intensive services.

Table 1: The effects of universities and technical colleges on regional employment.

	Private sector employment	Private sector employment	HQW	HQW	Employment in R&D intensive manufacturing	Employment in R&D intensive manufacturing	Employment in knowledge intensive services	Employment in knowledge intensive services
	I	II	III	IV	V	VI	VII	VIII
University (Years of Existence)	83.10 (95.6)	131.8 (117)	32.20*** (8.51)	61.93*** (8.79)	100.4** (41.9)	117.8*** (45.0)	96.22*** (13.7)	116.8*** (13.9)
Population Density, t-1	215.8*** (46.9)	24.06 (46.5)	40.79*** (4.17)	10.70*** (3.50)	-3.294 (20.6)	-31.14* (18.0)	45.31*** (6.72)	5.579 (5.56)
% share of employees in firms >250	1433*** (200)	571.3** (246)	63.32*** (17.8)	85.75*** (18.6)	965.7*** (87.8)	311.0*** (95.0)	-223.7*** (28.7)	-96.42*** (29.4)
% share of employees in firms >50 & <=250	1081*** (330)	359.0 (320)	50.80* (29.4)	58.86** (24.1)	875.4*** (145)	49.42 (123)	-316.7*** (47.4)	-168.8*** (38.2)
% share of employees in firms <=50	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Time effects	yes	yes	yes	yes	yes	yes	yes	yes
Industry controls	no	yes	no	yes	no	yes	no	yes
Constant	-25459 (15451)	-1633591*** (282648)	-9931*** (1375)	-88483*** (21286)	-35763*** (6778)	-30113 (109041)	7805*** (2215)	-152006*** (33768)
R2 within	0.48	0.80	0.84	0.96	0.40	0.82	0.78	0.94
Log likelihood	-4003	-3809	-3023	-2762	-3670	-3424	-3217	-2949
F	11.26	23.65	64.39	129.4	8.095	27.10	42.85	94.30

Fixed effects regression. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The number observations is 405 (15 regions, 27 years).

Table 2: The effects of universities and technical college on regional start-up activity.

	Private sector start-ups	Private sector start-ups	Start-ups in R&D intensive manufacturing	Start-ups in R&D intensive manufacturing	Start-ups in knowledge intensive services	Start-ups in knowledge intensive services
	I	II	III	IV	V	VI
University (Years of Existence)	11.16***	9.066*	0.295**	0.708***	8.552***	7.564***
	(3.69)	(5.23)	(0.13)	(0.21)	(1.57)	(2.84)
Population Density, t-1	6.199***	2.903	0.0941	0.0439	2.430***	1.076
	(1.81)	(1.96)	(0.062)	(0.083)	(0.77)	(1.13)
% share of employees in firms >250	-28.18***	-18.87	0.250	0.128	-3.666	-8.368
	(7.73)	(11.5)	(0.26)	(0.44)	(3.28)	(5.99)
% share of employees in firms >50 & <=250	-44.37***	-33.83***	0.147	-0.272	-5.646	-15.09*
	(12.8)	(13.9)	(0.44)	(0.57)	(5.42)	(7.78)
% share of employees in firms <=50	ref.	ref.	ref.	ref.	ref.	ref.
Time effects	yes	yes	yes	yes	yes	yes
Industry controls	no	yes	no	yes	no	yes
Constant	1730***	-27921*	-13.39	31.30	-169.5	-4518
	(597)	(15648)	(20.4)	(507)	(253)	(6877)
R2 within	0.81	0.85	0.51	0.65	0.81	0.84
Log likelihood	-2686	-2637	-1318	-1248	-2339	-2304
F	50.66	32.86	12.29	10.86	49.86	29.81

Fixed effects regression. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The number observations is 405 (15 regions, 27 years).

Conclusions

In West Germany significant number of universities and technical colleges has been founded after the WWII. In many of these cases foundation of new organization took place in regions that did not had universities before and often poorly performing and peripheral regions were chosen. In order to cope with the increasing demand for analysis of the effects of these university foundations, this paper aims to analyze some important aspects of regional development. Although university foundation can be viewed as a policy instrument for regional development, we show that time and place of university foundation often has been subject to several coincidences, strategic behaviour of politicians, and uncertainty about realization of planned projects. This allows us to considering the foundation of a new university in certain region as exogenous and to draw causal inference by using a generalized difference-in-difference approach.

The empirical evidence of our analysis suggests an important role of university foundation for employment creation in innovative and knowledge intensive private sector industries as well as for high qualified workers. Furthermore we find a significant positive impact on start-up activity in innovative and knowledge intensive industries. Overall, the results suggest that university are agents of change. That is, the foundation of a new university is related to a shift in the local economy towards more high-tech and knowledge intensive industries. Since most of the regions under consideration are moderately congested and/or rural regions our results may also allow important policy implications with respect to university foundation as an instrument for regional development.

However, since we only have regional employment and start-up data from 1975 onwards, we miss a number of large universities founded after WWII. This also reduces the number of regions in our sample. Furthermore although we found many examples of university foundations that let us expect considerable coincidences we cannot claim this to be true for all university foundations. Thus the endogeneity assumption of the treatment can be questioned.

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Appendix:

Table A1: Universities and regions used in the analysis.

Region (ROR)	Region name	Region type	Population in 1975	Population in 1975	HQW in 1975	HQW in 2002	Foundation	Years w/o treatment	Years with treatment
2	Schleswig-Holstein Süd-West	Rural area	266377.6	274292.6	351	1285	1993 (TC)	17	10
5	Schleswig-Holstein Süd	Agglomerated area	773705.9	954880.7	2586	8038	1993 (TC)	16	11
17	Emsland	Rural area	353850.6	440784.8	1604	2477	-	27	0
20	Südheide	Rural area	291977.5	324688.8	664	1769	-	27	0
38	Arnsberg	Moderately congested region	540172.4	589864.1	1221	4976	-	27	0
40	Emscher-Lippe	Agglomerated area	1074210	1050026	3031	5475	1992 (TC)	16	11
62	Mittelrhein-Westerwald	Moderately congested region	1131866	1279696	2409	7952	1984 (Univ)	8	19
80	Bayerischer Untermain	Moderately congested region	316862.3	375110.5	702	4075	1995	19	8
82	Main-Rhön	Rural area	418800.7	456030.8	1585	4265	-	0	0
85	Oberpfalz-Nord	Rural area	494197.3	521860.1	838	3354	1995 (TC)	19	8
87	Westmittelfranken	Rural area	367138.6	419472.9	418	1728	1996 (TC)	20	7
89	Ingolstadt	Moderately congested region	332904.6	445573	832	7064	1994 (TC)	19	8
91	Donau-Wald	Rural area	570478.4	662132.7	971	3229	1979 (Univ)	3	24
94	Donau-Iller (BY)	Moderately congested region	395625.1	461223.6	1057	3989	1994 (TC)	19	8
95	Allgäu	Rural area	400565.5	464665.8	1161	4071	1978 (Univ)	2	25