Fritsch, Michael; Stuetzer, Michael

Working Paper

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Jena Economic Research Papers, No. 2012,065

Provided in Cooperation with:
Max Planck Institute of Economics

Suggested Citation: Fritsch, Michael; Stuetzer, Michael (2012) : The geography of creative people in Germany revisited, Jena Economic Research Papers, No. 2012,065, Friedrich Schiller University Jena and Max Planck Institute of Economics, Jena

This Version is available at:
https://hdl.handle.net/10419/70193

JENA ECONOMIC RESEARCH PAPERS

2012 – 065

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Michael Fritsch
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www.jenecon.de

ISSN 1864-7057

The JENA ECONOMIC RESEARCH PAPERS is a joint publication of the Friedrich Schiller University and the Max Planck Institute of Economics, Jena, Germany. For editorial correspondence please contact markus.pasche@uni-jena.de.

Impressum:

Friedrich Schiller University Jena
Carl-Zeiss-Str. 3
D-07743 Jena
www.uni-jena.de

Max Planck Institute of Economics
Kahlaische Str. 10
D-07745 Jena
www.econ.mpg.de

Jena Economic Research Papers 2012 - 065

The Geography of Creative People in Germany revisited[1]

Michael Fritsch*‡

Michael Stuetzer+

November 2012

Abstract

It has been argued that creativity is an important source of regional growth. This paper investigates the geography of people in creative occupation in Germany. The population share of the creative class as well as of bohemians and artists is relatively high in larger cities, but smaller places and rural regions may also have a considerable proportion of people with a creative job. While ethnical and cultural diversity and high availability of public health care and education can explain the distribution of creative people, employment opportunities seem to play only a minor role.

JEL-classification: O31, O18, R11

Keywords: Creativity, innovation, entrepreneurship, regional development

* Friedrich-Schiller-University Jena, School of Economics and Business Administration, Carl-Zeiss-Str. 3, 07743 Jena, Germany.

‡ German Institute for Economic Research (DIW) Berlin, and Halle Institute for Economic Research (IWH), Germany.

+ Technical University Ilmenau, Chair of Economic Policy, Ehrenbergstr. 29, 98684 Ilmenau, Germany.

E-mail: m.fritsch@uni-jena.de; michael.stuetzer@tu-ilmenau.de

[1] This paper is a revised and updated version of Fritsch and Stuetzer (2009).

1. Introduction

Creativity as a source of growth has gained increasing attention in recent years. Creativity is the ability to create new knowledge or to transform existing knowledge. In his book „The Rise of the Creative Class" (2004),[2] Richard Florida has shown that the part of the population in the USA which is active in creative occupations is distributed rather unequal in space. According to Florida's analysis, people in creative occupations are concentrated in some few large city-regions, which he regards as hubs of technical and social innovation. Accordingly, the creative cities can be regarded as hothouses for future growth and development. Florida goes one step further in arguing that the creative people have pronounced locational preferences and that they represent a main source for attracting innovative activity from outside the region. His recommendation for regional policy makers is, therefore, to create a suitable environment for creative people in order to account for the key importance of this part of the regional population.

This paper analyzes the geography of people with creative occupations in Germany. Thereby we build on our previous work (Fritsch and Stuetzer, 2009) but analyze more recent data. Where do these people live and work? What is it that characterizes regions with a high share of creative inhabitants? Following an introduction of some basic hypotheses (Section 2), the indicators for a creative population are introduced (Section 3). Section 4 gives an overview of the regional distribution of the creative people. Results of multivariate analyses of the share of the population in creative occupations are presented in section 5. Section 6 concludes.

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[2] The first edition of the book appeared in 2002. We refer to the revised paperback edition from 2004.

2. Review of theory and empirical evidence

Creativity is often defined as the ability to recombine existing knowledge in new ways thereby generating new ideas or products (Hennessey and Amabile, 2009; Runco 2004; Sternberg and Lubart, 1996). Creativity is not restricted to outstanding scientists and artists such as Edison, Einstein, Goethe, Shakespeare, and Leonardo DaVinci. On the contrary, it is an ability inherent in all people who find ways to express their creativity in many different fields (Hartley and Cunningham, 2002). Since Richard Florida's (2004) seminal work, this creation has been attributed to members of the "creative class". Florida's main hypothesis is that creative class is an important driver for regional development as it generates innovations and fosters entrepreneurship. However, Florida's theory is not limited to the potential effects of creative people but also addresses the drivers of their location choice. In that sense, Florida offers a holistic theory of regional development, emphasizing the sociocultural underpinnings of regional wellbeing. In the following, we present theoretical arguments and empirical evidence regarding these two main streams of thought. In the third section we review some critique that has been brought forward.

2.1 Location choice of creative people

Florida (2003, 40; 2004) identifies "three interrelated types of creativity: (1) *technological creativity* or innovation, (2) *economic creativity* or entrepreneurship, and (3) *artistic or cultural creativity*." He argues that these three types of human creativity influence and reinforce each other. According to Florida, a main factor in explaining creativity driven growth is the locational choice of creative people. He suggests that creative people do not solely base their decision to live in a certain location because of job opportunities available there. According to him, factors such as the variety of the cultural supply, tolerance and openness towards new ideas, towards people of different ethnical

background, of different sexual orientation or different styles of living are just as important as the regional labor market. Florida (2004) assumes that creative people prefer a diversity of small-scale cultural activities with a vibrant night life and an innovative music scene over traditional cultural events such as museums, operas, ballets or professional sports teams.

According to Florida (2004), these factors are important for two reasons. First, it is easier for people to integrate in such an environment without having to abandon their own identity. Second, tolerance and openness may lead to variety. This gives creative people the opportunity to gain new experiences that can be a stimulus and inspiration for the creative process (Florida, 2004; Andersen and Lorenzen, 2005). Florida (2004) applies a number of indicators for openness, tolerance and cultural variety such as the share of foreign born population (Melting Pot Index), the share of people in artistic occupations (Bohemian Index) or the share of homosexual people (Gay Index). For the USA and some European countries, a couple of studies provide some evidence for this hypothesis. Boschma and Fritsch (2009) find that in many European countries, bohemians tend to live in regions characterized by a high share of immigrants and cultural activities. Asheim and Hansen (2009) also report positive correlations between the presence of artists and the regional share of creative people in Sweden. The attractive force of bohemia and cultural amenities becomes evident when looking at other variables than population shares. Analyzing a large scale data base of US citizens, Florida, Mellander and Stolarick (2011) found that the existence of cultural opportunities is an important determinant of higher community satisfaction. The presence of bohemians is also related to higher housing prices – even when controlling for economic factors (Florida and Mellander, 2010). Some other studies have found that the gay and lesbian population, indicating an open and tolerant climate, is correlated

with the presence of the creative class (e.g. Wojan et al., 2007; Florida, Mellander and Stolarick, 2008).

A further important element of Florida's approach is the hypothesis that creative people show no pronounced tendency to locate in regions where they can expect to have good employment opportunities ('people follow jobs') but rather that companies locate in regions where they can find the creative people they need ('jobs follow people'). Therefore, the concentration of creative people in a few locations can be regarded as a reason for the clustering of economic activity. This is particularly true for activities with a high demand for high qualified labor such as research and development, design and marketing and high-tech industries (Arora et al., 2000). There is mixed evidence for this specific hypothesis. While Boschma and Fritsch (2009) find a significantly positive relationship between regional employment change and the share of people in creative occupations in the European countries analyzed, employment growth is not related to changes of the share of the creative population in US regions (McGranahan and Wojan (2006).

2.2 Economic impact of creative people

Florida's main hypothesis regarding the economic impact of creative people is that members of the creative class generate new knowledge that can be commercialized by start-ups but also of course in incumbent firms. A main reason why openness, tolerance, and variety may provide a good breeding ground for new knowledge is that the encounter of people with different backgrounds can stimulate the combination of their knowledge (Desrochers, 2001; Boschma and Fritsch, 2009). This newly combined knowledge may then constitute an important source of innovation and the formation of new firms which are important drivers of

economic development (Schumpeter, 1911; Feldman, 2000; Fritsch, 2013).[3] Florida's argument is congruent to Jane Jacobs' (1970, 1985) ideas about the important role of cities as well as the basic hypotheses of the new economic growth theory (Lucas, 1988; Romer, 1986; 1993).

A number of studies have investigated the links between the creative class and several economic performance indicators. In two early studies, Florida and Gates (2001) and Lee, Florida and Gates (2002) show that there is a positive empirical relationship between ethnical diversity and innovation in US metropolitan areas. When looking at patents as a dependent variable, studies find a positive relationship between the density of creative workers and patenting activity in US regions (Knudsen et al., 2008) and in German regions (Boschma and Fritsch 2009). This suggests the importance of the creative class in generating knowledge. As well as innovation, entrepreneurship is another mechanism of how the creative class might impact the economy. Quite a number of studies suggest that the creative class as a whole, or subgroups thereof such as bohemians, can be an important source of start-ups (Bieri, 2010; Boschma and Fritsch, 2009; Fritsch and Rusakova, 2012; Lee et al., 2004) or the expansion of existing firms (Stolarick et al., 2011). Another group of studies have investigated the link between the creative class and more general indicators of economic performance. Although these studies are not completely convincing in terms of methodology and econometric strategy, there is some evidence that the creative class is related to productivity, income and employment (Florida, Mellander and Stolarick, 2008; Boschma and Fritsch, 2009; McGrahanan and Wojan, 2006).

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[3] A main reason for a person to set up a new firm is that knowledge and ideas may hardly be tradable on the market. Therefore, setting up an own firm may be the only way for someone to realize her or his ideas (Audretsch, 1995; Wennekers und Thurik, 1999; Klepper und Sleeper, 2005).

2.3 Critique of Florida's creative class theory

Florida's ideas have provoked considerable controversy. One strand of criticism is directed towards the definition of creative people for the empirical analysis on the basis of occupations. Many of the occupations that Florida regards as creative require a relatively high level of qualification. Thus, his critics state that he measures the impact of qualification, not creativity on economic development (Markusen, 2006; Glaeser, 2005). This kind of critique is correct to the extent that there tends to be a highly positive correlation between the share of people in creative occupations and the share of people with a higher level of education. However for the contribution to economic development, the way how qualification is applied may be of importance. A taxi driver with a Ph.D. may be highly qualified, but is he more creative than other people? Even if he was a rather creative taxi driver, can he, in his position, have a significant influence on the creation and the application of new ideas? A review of the empirical studies indeed shows that in most cases creative class indicators outperform indicators of education when analyzing regional growth (McGranahan and Wojan, 2007; Florida, Mellander and Stolarick, 2008; Boschma and Fritsch, 2009).

A further point of criticism is directed towards the impact of people in artistic occupations, the bohemians, on economic development (Malizia and Feser in Lang and Danielsen, 2005; Markusen, 2006). These critics doubt that there is a causal relationship between a high share of bohemians in a region and economic development. Correlations and regressions relating the share of people in creative occupation today to the current wealth level or to economic growth are not really convincing in this respect because there is a "chicken or the egg problem" with regards to the underlying causality: Does the presence of creative people cause growth or do growth and wealth induce spending on cultural amenities? In the latter case, a high share

of people in cultural occupation would not be a cause but more a symptom of economic prosperity. Falck, Fritsch and Heblich (2011) tried to overcome this problem by using the presence of an opera house built in the baroque era before the year 1800 as an indicator for cultural activity. They show for the case of Germany that proximity to a baroque opera house still has a significantly positive impact on the regional distribution of high-skilled employees as well as on regional growth today.

3. Who are the creative people?

Florida's creative class (2004, 8) consists of people that "engage in complex problem solving that involves a great deal of independent judgment and requires high levels of education of human capital. … Those […] in the Creative Class are primarily paid to create and have considerable more autonomy and flexibility than the other […] classes to do so." According to Florida, the core of the creative class includes "people in science and engineering, architecture and design, education, arts, music and entertainment, whose economic function is to create new ideas, new technology and/or new creative content" (ibid.). Surrounding this creative core is "a broader group of creative professionals in business and finance, law, health care and related fields". An important sub-group of the creative core is the bohemians, which includes the artistically creative people such as "authors, designers, musicians, composers, actors, directors, painters, sculptors, artists, printmakers, photographers, dancers, artists, and performers" (Florida, 2004, 333).

For the empirical analysis, the different categories of creative people are identified by their occupation. The main data source used for this is the German Social Insurance Statistics (see Fritsch and Brixy, 2004, for a brief description). All persons contained in the statistics can be assigned to the place of their employment. This information was

classified according to the International Standard Classification of Occupations (ISCO) in the 1988 version (see for the ISCO classification Elias, 1997). We use an updated list of creative occupations that takes into account the criticism regarding construct validity (McGranahan and Wojan, 2006).Table A1 in the Appendix shows the definitions of the different types of creative occupations according to the ISCO classification.

A shortcoming of the German Social Insurance Statistics is that entrepreneurs, freelancers and civil servants are not included. This is particularly relevant for the bohemians because many of these occupations are characterized by a relatively high share of freelancers. It is estimated that about half of the active artists in Germany are working as freelancers and are not recorded in the Social Insurance Statistics (Haak, 2005). Information about the freelance artists is drawn from the *Künstlersozialkasse*, a special insurance created for those artists who are not in regular employment and, therefore, not subject to obligatory social insurance payments.[4] According to this data source, the freelance artists are assigned to their place of residence. Information on a regional basis about entrepreneurs or civil servants that indicate the creativity of their activity is not available. Therefore, this category of people is not contained in the empirical analysis.

4. Where do the creative people live and work?

According to the Social Insurance Statistics, in 2007, the share of employees in Germany engaging in creative occupations was 14.3 percent (Table 1). The creative professionals made the largest part of

[4] We are indebted to Mr. Harro Bruns of the *Künstlersozialkasse* for providing these data.

the three sub-groups, accounting for 11.8 percent of population. The creative core occupations were the second largest group with a share of 2.2 percent. The share of employed bohemians made only 0.19 percent of the population. The share of the freelance artists was about 0.20 percent. The largest group among the freelance artists were in the fine arts (0.07 percent) followed by musicians (0.05 percent), writers (0.05 percent), and performing artists (0.02 percent).

Table 1: Population share (%) of people with creative occupations and location coefficients in different types of regions 2007 (share of population / location coefficient)

	Germany	Agglomerations			Moderately congested regions		Rural areas
		Overall	Core cities	Rest	Overall	Core cities	
Creative class	14.4 / 1.00	17.1 / 1.19	22.2 / 1.54	12.3 / 0.86	12.6 / 0.87	23.0 / 1.60	11.2 / 0.78
Creative core	2.2 / 1.00	2.9 / 1.31	3.9 / 1.77	1.9 / 0.89	1.7 / 0.80	3.9 / 1.79	1.4 / 0.62
Creative professionals	11.8 / 1.00	13.7 / 1.16	17.5 / 1.48	10.0 / 0.85	10.6 / 0.89	18.5 / 1.57	9.7 / 0.82
Employed bohemians	0.19 / 1.00	0.25 / 1.36	0.38 / 2.05	0.13 / 0.72	0.14 / 0.74	0.36 / 1.91	0.11 / 0.61
Freelance artists	0.20 / 1.00	0.29 / 1.48	0.47 / 2.37	0.13 / 0.66	0.12 / 0.62	0.24 / 1.21	0.10 / 0.51
- Writers	0.05 / 1.00	0.08 / 1.60	0.13 / 2.65	0.03 / 0.63	0.03 / 0.50	0.05 / 1.02	0.02 / 0.42
- Performing arts	0.02 / 1.00	0.04 / 1.59	0.06 / 2.71	0.01 / 0.55	0.01 / 0.51	0.02 / 1.10	0.01 / 0.44
- Music	0.05 / 1.00	0.07 / 1.31	0.10 / 1.88	0.04 / 0.79	0.04 / 0.78	0.07 / 1.39	0.03 / 0.64
- Fine arts	0.07 / 1.00	0.11 / 1.48	0.17 / 2.40	0.04 / 0.63	0.04 / 0.62	0.09 / 1.25	0.04 / 0.51

In the 1993-2007 period, the share of creative occupations out of all employees in Germany, as recorded in the Social Insurance Statistics, increased from 37.1 percent to 42.3 percent. Most notably the share of creative core occupations has increased from 5.1 to 6.5 percent. Unfortunately, the information for the freelance artists does not allow

meaningful longitudinal comparisons due to increasing coverage of the basic population over time (Haak, 2005).

More than half of the creative people in all categories live or work in the agglomerations[5], while the share of creative people located in rural regions is less than 20 percent. Since the population is rather unevenly distributed among the different spatial categories, information on the share of creative people in different types of regions makes only limited sense. In order to judge to what extent a concentration of creative people in certain regions is, their share is related to the share of the population. This is done by calculating a location coefficient according to

$$\text{Location coefficient} = \frac{\frac{\text{Number of creatives}_{\text{region}}}{\text{Population}_{\text{region}}}}{\frac{\text{Number of creatives}_{\text{Germany}}}{\text{Population}_{\text{Germany}}}}.$$

This location coefficient indicates to what extent the share of creative people in a region is above or below the national share. The more the location coefficient exceeds unity, the more above the national average the share of creative people is. A value below unity indicates a share of people in creative occupations below the national average.

According to the location coefficients, the shares of the different types of creative people are above average mainly in cities (Table 1). In rural areas and in the moderately congested regions, the value of the location coefficient is almost always below one; thus, indicating a

[5] The definition of the spatial categories is from the *Bundesamt für Bauwesen und Raumordnung* (BBR) (2003).

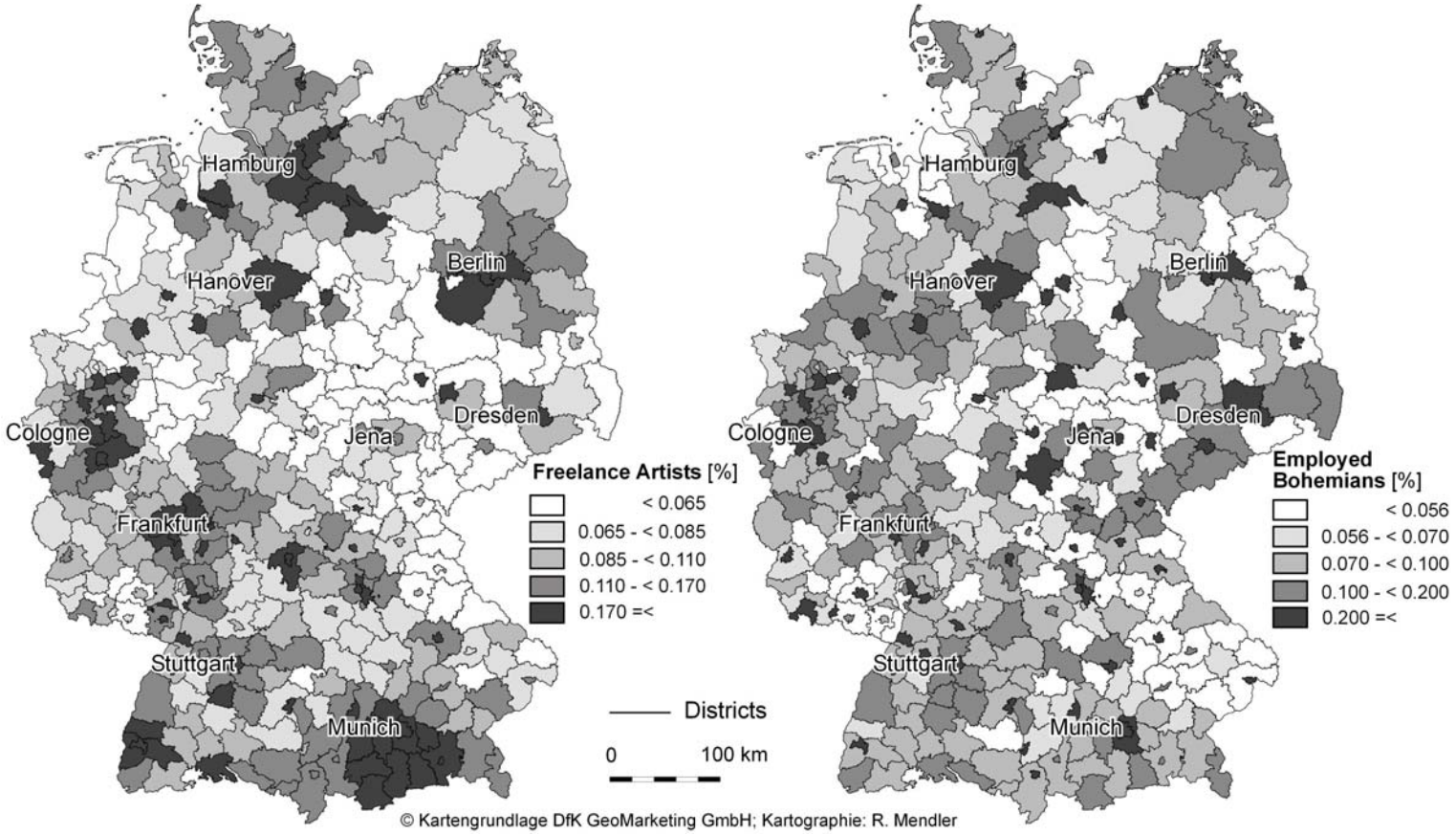

Figure 1: Population share of freelance artists and employed bohemians in German districts 2007

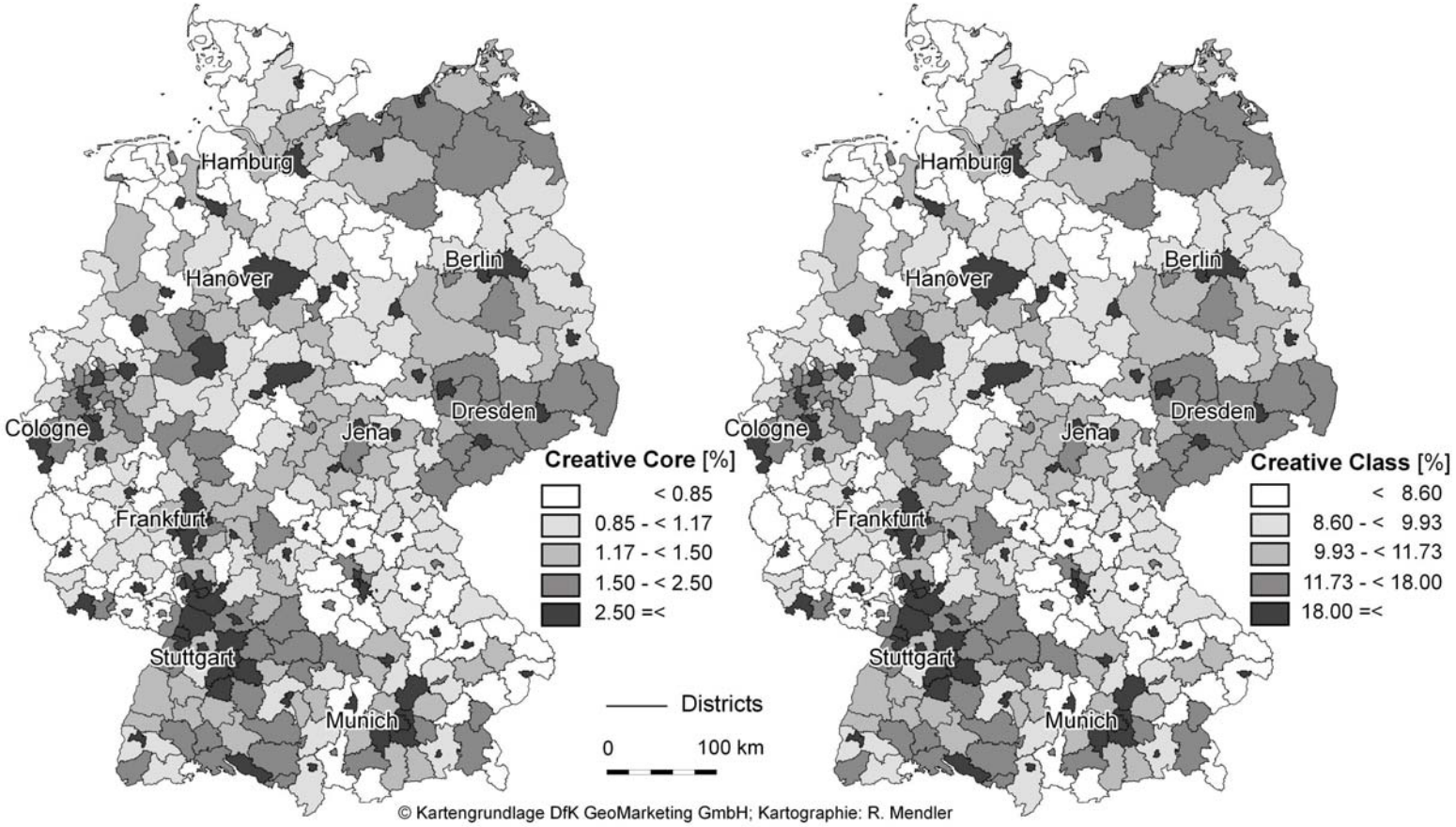

Figure 2: Population share of creative Core and creative class in German districts 2007

relatively low share of creative people in this type of region. The maps with the population share of freelance artists and employed bohemians make the differences between the two categories rather obvious (Figure 1). The highest shares of freelance artists are found in Munich, Cologne, Berlin, Freiburg, Hamburg, Düsseldorf and Frankfurt (Main). There are also remarkably high shares of freelance artists in regions which are regarded as having a high quality of living such as the area around Freiburg and the region south of Munich which borders the Alps. Compared to the freelance artists, the employed bohemians are more evenly distributed in space. The share of employed bohemians is relatively high in the cities and tends to be low in remote rural areas. A main reason why the locations of the freelance artists are more scattered throughout the cities may be that they are assigned to their place of residence while the employed bohemians are assigned to the location of their workplaces, which are concentrated in the cities.

The share of employees in the creative core is also relatively high in the cities (Figure 2). However, the cities with the highest share of creative core employees are medium-sized cities such as Erlangen, Darmstadt, Heidelberg, Ulm, Wolfsburg, Regensburg and Jena; many of them have a large manufacturing sector and a headquarter of a large firm. The only larger cities with high shares of creative core employment are Munich and Stuttgart. The population share of the creative class as a whole ranges between 47.1 percent (city of Erlangen) and 4.27 percent (Südwestpfalz). Relatively high shares are found in the cities of Düsseldorf, Frankfurt (Main), Munich and Stuttgart.

In the discussion about the long-lasting economic weakness of the East German economy, it has sometimes been argued that the share of creative people in the East is relatively low because the creative part of the population has migrated outward during the GDR regime and

Table 2: Population share (%) of people in creative occupations and location coefficients in East and West Germany 2007

	West	East (including Berlin)	East (Berlin excluded)	Berlin
Creative class	14.7 / 1.02	13.0 / 0.90	12.2 / 0.85	15.9 / 1.11
Creative core	2.2 / 1.01	2.1 / 0.95	1.9 / 0.89	2.5 / 1.16
Creative professionals	12.1 / 1.03	10.5 / 0.89	10.0 / 0.85	12.3 / 1.04
Employed bohemians	0.18 / 0.98	0.20 / 1.07	0.16 / 0.88	0.34 / 1.81
Freelance artists	0.18 / 0.93	0.25 / 1.27	0.11 / 0.55	0.80 / 4.06
- Writers	0.05 / 0.92	0.07 / 1.30	0.02 / 0.48	0.23 / 4.62
- Performing arts	0.02 / 0.84	0.04 / 1.62	0.01 / 0.54	0.14 / 5.83
- Musicians	0.05 / /0.95	0.06 / 1.19	0.04 / 0.69	0.16 / 3.12
- Fine arts	0.07 / 0.96	0.08 / 1.17	0.04 / 0.51	0.26 / 3.75
Employees with social insurance	34.0 / 1.01	29.9 / 0.94	31.4 / 0.94	32.0 / 0.96

thereafter. The share of the creative class is, indeed, 1.7 percent lower in the East as compared to the West (Table 2). This result is particularly due to the relatively low share of creative professionals in East Germany. However, the share of the creative core in East Germany is only slightly below the Western level, and the share of employed bohemians and freelance artists is higher in the East than in the West. These results are largely due to a high concentration of people with creative occupations, particularly the employed bohemians and freelance artists, in Berlin. If Berlin is excluded, the location coefficients for people in creative occupations in East Germany are clearly below the West German level.

5. What determines the regional share of creative population?

In order to explain the regional share of creative population three hypotheses are tested:

- *First*, a high quality of life in a region attracts creative people. We use two indicators for the regional quality of life. One indicator is the abundance and the variety of the cultural supply in a region as measured by the share of employed bohemians and freelance artists (Artist-Bohemian Index). A second indicator is the share of the employees in public health care and education (Public Provision Index).
- *Second*, creative people value a regional environment that is characterized by openness and tolerance. The measure for openness and tolerance is the share of people with foreign citizenship that are dependently employed in a region (Openness Index). This indicator corresponds to Florida's (2004) Melting-Pot Index.
- *Third*, job opportunities on the regional labor market are relatively unimportant for the locational choice of the creative people. Regional opportunities of employment are measured by the average employment growth rate in the preceding three and seven years.

Population density is included in the regressions as a catch-all variable to control for all kinds of regional characteristics such as land prices, size of the labor market and availability of public infrastructure. In order to account for the special situation in East Germany, a dummy variable for a location in the East (including Berlin; 1=East, 0=West) is entered into the regressions. Since the share of population with foreign citizenship is generally lower in the East, an interaction of the dummy for a location in East Germany with the Openness Index is also included. In order to facilitate a comparison of the different independent variables, the tables show the standardized regression coefficients (beta coefficients). The higher the absolute value of a beta coefficient, the stronger the impact of the respective variable on the share of creative people is. All independent variables are lagged by one year.

Table 3 shows descriptive statistics for the variables included in the regressions.

Table 3: Descriptive statistics for the distribution of the variables used in the regressions in the share of creative occupations (Table 4 – Table 7*)*

Variable	Mean	Standard deviation	Minimum	Maximum
Index creative class (without bohemians)	12.89	6.46	4.19	46.67
Index creative core	1.85	1.62	0.30	16.68
Index employed bohemians	0.15	0.17	0.02	1.83
Index Freelance Artists	0.13	0.11	0.03	0.82
Artist-Bohemian Index	0.28	0.25	0.06	2.10
Public Provision Index	7.74	2.34	1.76	17.45
Openness Index	7.23	4.55	0.70	25.20
Population density	515.52	669.7	20.63	4162.73
Employment growth rate previous three years	0.02	0.03	-0.05	0.15
Employment growth rate previous seven years	-0.07	0.06	-0.27	0.10
Employment growth rate 2008-2007	0.02	0.01	-0.03	0.07

The regressions for the share of the creative class and the creative core (Tables 4 and 5) clearly indicate a positive impact on the share of employed bohemians and the freelance artists. A slightly larger positive effect can also be found for the Openness Index. Population density is only statistically significant for the share of the creative class, not for the creative core. The level of public services, as measured by the Public Provision Index, does not seem to have an effect on the presence of people in creative occupations. The dummy for location in East

Table 4: Determinants of the regional share of creative class 2007 (without bohemians)[a]

	Share of creative class (ln)			
	(I)	(II)	(III)	(IV)
Artist-Bohemian Index (ln)	0.508** (12.70)	0.482** (11.66)	0.469** (11.28)	0.465** (11.24)
Public Provision Index (ln)	0.024 (0.65)	0.005 (0.12)	0.012 (0.32)	0.012 (0.33)
Openness Index (ln)	0.595** (9.84)	0.519** (7.59)	0.516** (7.60)	0.482** (7.00)
Population density	–	0.108* (2.39)	0.119** (2.62)	0.139** (3.01)
Location in East Germany (Dummy)	0.249** (3.71)	0.227** (3.37)	0.222** (3.31)	0.253** (3.75)
Openness Index * location in East Germany (interaction)	-0.181** (2.62)	-0.159* (2.30)	-0.169* (2.44)	-0.151* (2.19)
Employment growth rate previous three years	–	–	0.064* (2.14)	–
Employment growth rate previous seven years	–	–	–	0.094** (2.79)
$R^{2adj.}$	0.647	0.651	0.654	0.657

[a] Beta coefficients of robust least square regressions; *t*-values in parentheses; **statistically significant at the 1 percent level, * statistically significant at the five percent level; number of observations: 410.

Germany has a significantly positive value indicating a relatively high share of creative employment in the East. The negative sign for the interaction of location in East Germany and the Openness Index show that the positive effect of the population with foreign citizenship is considerably weaker in the East. The effect of employment growth on the share of creative people in a region turns out to be relatively weak as compared to the results for the other variables. The higher beta coefficient for the seven-year employment growth rate indicates that the effect of employment opportunities is particularly relevant in the long run. It can be concluded from these results, that creative people do not

Table 5: Determinants of the regional share of creative core 2007[a]

	Share of creative core population (ln)			
	(I)	(II)	(III)	(IV)
Artist-Bohemian Index (ln)	0.431** (11.26)	0.427** (10.75)	0.416** (10.39)	0.404** (10.25)
Public Provision Index (ln)	0.061 (1.74)	0.059 (1.63)	0.065 (1.81)	0.070* (1.99)
Openness Index (ln)	0.744** (12.87)	0.734** (11.18)	0.733** (11.20)	0.683** (10.43)
Population density	–	0.014 (0.31)	0.023 (0.53)	–
Location in East Germany (Dummy)	0.359** (5.59)	0.356** (5.49)	0.351** (5.44)	0.393** (6.13)
Openness Index * location in East Germany (interaction)	-0.343** (5.19)	-0.340** (5.10)	-0.348** (5.24)	-0.328** (5.02)
Employment growth rate previous three years	–	–	0.059* (2.00)	–
Employment growth rate previous seven years	–	–	–	0.135** (4.22)
$R^{2adj.}$	0.677	0.677	0.679	0.690

[a] Beta coefficients of robust least square regressions; *t*-values in parentheses; ** statistically significant at the 1 percent level, * statistically significant at the five percent level; number of observations: 410.

completely ignore their employment opportunities on the local labor market and that they *do* tend to follow jobs, but that the effect is relatively small as compared to other characteristics of a region.

The analyses for the share of employed bohemians (Table 6) show a rather strong positive effect for the Public Provision Index and the Openness Index. The positive effect of the population density is probably due to a concentration of cultural establishments such as theaters, opera houses etc. in larger cities. The significantly positive coefficient for the East-Germany dummy may also be an effect of relatively high numbers of cultural establishments in the East. As in the regressions for the creative class and the creative core the interaction

Table 6: Determinants of the regional share of employed bohemians 2007

	Share of employed bohemians (ln)			
	(I)	(II)	(III)	(IV)
Public Provision Index (ln)	0.300** (6.79)	0.222** (5.01)	0.229** (5.20)	0.226** (5.09)
Openness Index (ln)	0.617** (8.80)	0.359** (4.39)	0.349** (4.30)	0.325** (3.89)
Population density	–	0.300** (5.61)	0.311** (5.84)	0.321** (5.89)
Location in East Germany (Dummy)	0.512** (6.30)	0.416** (5.18)	0.400** (5.02)	0.432** (5.37)
Openness Index * location in East Germany (interaction)	0.130 (1.50)	0.177* (2.10)	0.157 (1.88)	0.180* (2.15)
Employment growth rate previous three years	–	–	0.100 (2.78)	–
Employment growth rate previous seven years	–	–	–	0.076 (1.86)
$R^{2adj.}$	0.436	0.475	0.484	0.478

[a] Beta coefficients of robust least square regressions; *t*-values in parentheses; ** statistically significant at the 1 percent level, * statistically significant at the five percent level; number of observations: 410.

between the East dummy and the Openness Index shows a significantly negative effect. No significant effect can be found for employment growth.

In the regressions for the share of freelance artists (Table 7), the effect of the Public Provision Index is much weaker than for the employed bohemians. The dummy variable for location in East Germany is only significant or insignificant at the 10 percent level and the interaction between the East dummy and the Openness Index has a not so significant positive sign. While the three years employment growth rate is not statistically significant, we find a significantly positive effect for the seven years employment growth rate indicating a particular dependence on regional prosperity.

Table 7: Determinants of the regional share of freelance artists 2007[a]

	Share of freelance artists (ln)			
	(I)	(II)	(III)	(IV)
Public Provision Index (ln)	0.286** (6.05)	0.232** (4.74)	0.237** (4.85)	0.238** (4.90)
Openness Index (ln)	0.432** (5.72)	0.247** (2.75)	0.240** (2.67)	0.188* (2.05)
Population density	–	0.215** (3.66)	0.223** (3.79)	0.253** (4.24)
Location in East Germany (Dummy)	0.240* (2.74)	0.171 (1.94)	0.160 (1.81)	0.199* (2.27)
Openness Index * location in East Germany (interaction)	0.180 (1.93)	0.213* (2.31)	0.200* (2.16)	0.220* (2.40)
Employment growth rate previous three years	–	–	0.072 (1.80)	–
Employment growth rate previous seven years	–	–	–	0.135** (3.00)
$R^{2adj.}$	0.351	0.364	0.368	0.376

[a] Beta coefficients of robust least square regressions; *t*-values in parentheses; ** statistically significant at the 1 percent level, * statistically significant at the five percent level; number of observations: 410.

6. Discussion and conclusion

The objective of this paper was to investigate the geography of the creative class in Germany. Our first main finding is that the creative class is not equally distributed in space. Quite in contrast, the majority of the creatives live and work in agglomerated areas and cities. This clustering is particularly prevalent for the creative core, bohemians and freelancing artists. With respect to the determinants of this observed unequal distribution, we find that the creative class is located in regions with high quality of life (operationalized by the Artist-Bohemian Index and the share of employment in education and public health care). Another important predictor for the regional share of the creative class is an open and tolerant environment (measured with the share of people with foreign citizenship). In contrast, job opportunities (though a statistically significant predictor) seem to be of less importance for the

locational choice of the creative class. Taken together, this supports Richard Florida's basic hypotheses that the creative are attracted by a friendly "people climate." Hence, regions lacking features such as small-scale cultural amenities or a culture open towards newcomers and new ideas are in danger of experiencing a continued drain of creative people.

A critical issue that is of crucial importance for the empirical study of the creative class is the identification of creative people. Creativity of people can hardly be assessed directly and is not a characteristic that is reported in official statistics. Therefore, Florida's approach of measuring the immeasurable by identifying the creative class by occupation cannot be regarded as more than a rather rough approximation. The creative class, according to this definition, is a rather heterogeneous crowd. It includes people of different ages and stages of their career; scientists, engineers, highly paid managers as well as poor artists without a regular income. These people may have rather different preferences as well as degrees of freedom in making locational choices. The basic idea that creativity and knowledge constitute key drivers of regional development and that policy should account for people who embody these important resources, has great appeal. Yet, we need to know considerably more about these types of people and their role in the local social system in order to be able to draw substantiated policy conclusions.

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Appendix

Table A1: The creative occupations

Groups of creative people	*Occupations (ISCO-Code)*
Creative core	Computing services department managers (1236), Research and development department managers(1237), Physicists, chemists and related professionals (211); Mathematicians, statisticians and related professionals (212); Computing professionals (213); Architects, engineers and related professionals (214); Life science professionals (221); College, university and higher education teaching professionals (231); Secondary education teaching professionals (232); Primary and pre-primary education teaching professionals (233); Special education teaching professionals (234); Other teaching professionals (235); Archivists, librarians and related information professionals (243); Social sciences and related professionals (244); Primary education teaching associate professionals (331); Pre-primary education teaching associate professionals (3320); Special education teaching associate professionals (3330); Other teaching associate professionals (3340); Statistical, mathematical and related associate professionals (3434); Jewelry and precious-metal workers (7313); Glass, ceramics and related decorative painters (7324); Tailors, dressmakers and hatters (7433)
Creative professionals	Legislators, senior officials and managers (1; except 1236 and 1237); Medical doctors and other health professionals (222); Business professionals (241); Legal professionals (242); Public service administrative professionals (247); Physical and engineering science associate professionals (31); Broadcasting and telecommunications equipment operators (3132); Life science and health associate professionals (32); Finance and sales associate professionals (341); Business services agents and trade brokers (342); Legal and related business associate professionals (3432); Athletes, sportspersons and related associate professionals (3475); Musical instrument makers and tuners (7312); Handicraft workers in wood and related materials (7331); Handicraft workers in textile, leather and related materials (7332)
Employed bohemians	Writers and creative or performing artists (245); Photographers and image and sound recording equipment operators (3131); Artistic, entertainment and sports associate professionals (347); Fashion and other models (521).
Freelance artists	Writers, performing arts, fine arts, music.