

RON A. BOSCHMA
MICHAEL FRITSCH

Creative Class and Regional Growth in Europe

1. Introduction

A debate has recently emerged about the role of creative people on economic growth (Lang and Danielsen, 2005). In his book “The Rise of the Creative Class,” Richard Florida (2004) argued that creative people are a key driver of urban and regional development. According to his empirical analysis for the United States of America, the creative class is not evenly distributed among cities and regions, and it is especially attracted to places, which are characterized by an urban climate of tolerance that is open to new ideas and newcomers. Florida states that it is this type of ‘people’s climate’, rather than ‘business climate’ (such as low taxes or good infrastructure *per se*) that is crucial for regional growth. He argues that creative people induce and attract new economic activities, such as start-ups and high-tech firms.

There are hardly any empirical studies available that provide information on creative people in countries other than the USA and that make a systematic comparison between regions in different countries. This contribution is an attempt to fill in this gap. We present the results of a large research project¹ on the creative class and regional development in eight European countries (Denmark, Finland, Germany, Netherlands, Norway, Sweden, Switzerland and United Kingdom). In this research project, data on creative employment and development at the regional level have been collected by using similar definitions, thus, trying to make the information comparable between the countries.

We deal with three research questions. First, how concentrated is the distribution of the creative class among European regions? Second, what are the determinants of the share of creative population in a region? Third, does the creative class have an effect on regional growth? Due to data limitations, the analysis of the impact of creative people on regional development will be restricted to only two European countries, Germany and the Netherlands.

¹ The European research project was titled “Technology, Talent and Tolerance in European Cities: A Comparative Analysis”. The project was supervised by Bjorn Asheim and Meric Gertler and financed by the European Science Foundation, among other national financial sources. Data were collected by eight European teams in the 2004-2006 period based on national data sources that were made comparable between the eight participating countries. The members of the national teams were Kristina Vaarst Andersen and Mark Lorenzen (Denmark); Irina van Aalst, Oedzge Atzema, Ron Boschma and Frank van Oort (Netherlands); Mika Raunio and Markku Sotarauta (Finland), Michael Fritsch (Germany), Arne Isaksen and Markus Bugge (Norway); Bjorn Asheim and Hogni Kalso Hansen (Sweden), Christof Kloepper and Tina Haisch (Switzerland); Phil Cooke and Nick Clifton (United Kingdom).

In the following section, we briefly set out the main ideas of Richard Florida's work that will be tested with the European data set. Section 3 provides details on this data set, and section 4 summarizes the spatial distribution of the creative class in the eight European countries. In section 5, we will explain this European pattern by means of a regression analysis. Finally, we try to assess the effects of the creative class on regional employment growth in two of the European countries (section 6) and draw conclusions (section 7).

2. Creative class, urban climate and regional growth

A basic idea of Florida's (Florida, 2004) work on the role of the creative class for economic development is that geography matters. He asserts that the creative class is especially attracted to places that are characterized, among other things, by a tolerant urban climate that is open to new ideas and to newcomers. According to Florida, creative people tend to be attracted to tolerant and open regional societies that offer a diversified group of people with different cultural and ethnic backgrounds. A main reason for this preference is that diversity serves as a source of inspiration in the innovation process (Andersen and Lorenzen, 2005). In addition, the creative class attaches great values to urban facilities and cultural services such as cinemas, bars, museums, art galleries, restaurants and trendy shops. In other words, Florida places emphasis on the socio-cultural underpinnings of regional development. It is an urban culture characterized by tolerance, diversity and open mindedness that constitutes an important asset for economic development because it attracts the creative class.

According to Florida, this type of 'people's climate' provides a conducive environment for regional growth. This stands in contrast to conventional beliefs that refer to qualities of places in terms of 'business climate', such as low taxes or good infrastructure. The essence of Florida's proposition is that places with a good 'people's climate' retain and attract creative people who, in turn, induce new economic activities, such as start-ups and high-tech firms. Therefore, the creative class is not attracted to places with high growth *per se*. On the contrary, regional growth is expected to be more of an outcome of the presence of creative people, or in the terminology of Florida, jobs will follow people instead of people following jobs.

Richard Florida's ideas about the role of the creative class for economic development have induced considerable controversy. A major part of the debate concerns the question whether creative people are really different from educated and skilled persons. According to Glaeser (2004), creative capital equals human capital, as most, if not all, members of the creative class are skilled and highly educated individuals. Therefore, Glaeser claims that it is of no use to include creative capital in a growth model that already accounts for the effect of human capital. Running regressions using Florida's data, Glaeser's analysis shows that human capital takes away the positive effect of the creative class on urban growth in the US in the 1990s. In fact, the creative class variables become negative and statistically insignificant in his regressions when adding human capital.

Another related issue that remains almost untouched in Florida's thesis is the importance of knowledge spillovers for regional growth. All that matters is the presence of the creative class; cities grow more when they attract a disproportionate share of creative people, not because cities cause the creative class to be more productive and more innovative. Other critiques on Florida's work mainly concern empirical issues that will be dealt with in the following sections.

3. The measurement of the creative class

In his empirical analyses, Florida (2002a and b, 2003, 2004) based his definition of the creative class on professions, not industries. According to Florida, the creative class is a category of people who are engaged in creative, innovative jobs that can be found in every industry. Creative people are defined as workers who are engaged in identifying problems, figuring out new solutions and combining pieces of knowledge in new and innovative ways. While the general idea behind the creative class may sound plausible and appealing, its definition and measurement is still problematic. A main weakness of this kind of definition is that assigning certain professions to the creative class tends to be biased to the higher educated, largely excluding creative people in occupations that require low or no level of education (Markusen, 2006; Markusen and Schrock, 2006).

In our empirical approach, we have used Florida's definition of the creative class for a purely pragmatic reason. One of the objectives of the European project was to conduct a comparative analysis of European regions similar to the study for the US. Using comparable definitions (based on professions) allows us to investigate the similarities and differences between the US and the European case. Three steps have been taken to define and measure the creative class.

- As a starting point we adopted the definitions of creative occupations as given by Florida (2004). We followed his idea to distinguish between the creative core, creative professionals and bohemians. Creative core members are those individuals who invent. They basically are comprised of occupations in Research and Development and higher education. Creative professionals include educators, managers and health care professionals. Bohemians are engaged in cultural and artistic occupations. Bohemians fulfil two roles: they are part of the creative class, and they reflect an urban culture of tolerance; thus they act as a key factor in attracting the two other categories of creative people. According to Florida, the creative core and the bohemians are mainly engaged in 'problem finding' activities, i.e., creating new ideas, knowledge, technology, designs and content. By contrast, creative professionals are active in 'problem solving' activities. We largely followed Florida's work in assigning the professions to these three main categories.
- In order to secure international comparisons, we used the International Standard Classification of Occupations (ISCO 88) to select professions that belong to the creative class. This classification scheme has been developed by the International Labour Office (ILO) and is based on the types of skills that are necessary to conduct a profession. The selected 3-digit ISCO categories are presented in table 1.
- Each country team applied these classifications to their national data sources. Due to data availability and different ways of measurement, it is unavoidable that country-specific effects may occur in the data, which result in limited comparability between countries. In our analyses, we will account for this problem by including country dummies in our estimation models.

Having identified the professional categories of the creative class, we were able to calculate the numbers for each country, making use of national employment data that are provided by profession and by region around the year 2002². Our results show that in the eight European countries the creative class consists of about 26,327,588 workers in 2002, which comprises about 38 percent of the total workforce and about 16 percent of the total population.³ The creative professionals form the largest category (18,438,626 persons) followed by the creative core (6,764,318 persons). The size of the bohemians is comparatively small and amounts to 1,124,644 employees.

² The creative class data for Denmark refer to the year 1999, for Finland to 2000, for Switzerland and the UK to the year 2001 and for Norway to 2004. The workforce data are for 2002, with the exception of Switzerland (2001).

³ The total workforce has been calculated in each country as the total number of workers that work at least half of the regular full-time employment hours per week.

Table 1.

The creative occupations

Groups of creative people	Occupations (ISCO-Code)
Creative core	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); Health professionals (except nursing) (222); 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); Public service administrative professionals (247).
Creative professionals	Legislators, senior officials and managers (1); Nursing and midwifery professionals (223); Business professionals (241); Legal professionals (242); Physical and engineering science associate professionals (31); Life science and health associate professionals (32); Finance and sales associate professionals (341); Business services agents and trade brokers (342); Administrative associate professionals (343); Police inspectors and detectives (345); Social work associate professionals (346).
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).

4. The spatial distribution of the creative class in Europe

For most of the countries, the data are available at the level of NUTS III—regions, which more or less correspond to city regions or labor market areas⁴. At this rather detailed spatial scale, the place of residence and place of work are expected to coincide. The data set we use comprises information for 471 regions.

In the regions of the eight European countries as a whole (table 2), the descriptive statistics of the share of the creative class are in line with Florida's statement that the creative class is highly

⁴ NUTS (*Nomenclature des Unités Territoriales Statistiques*) is a hierarchical regional classification system used for the member states of the European Community. The data for the Netherlands are for 40 regions, the data for the UK comprise 106 regions. The 47 Swedish regions are defined as labor market regions (A-Regioner) based on travel to work patterns. In Switzerland, 25 city-regions as defined by the statistical offices were included. In Finland, there are 25 regions. The 77 Norwegian regions are so-called city-regions. These concern NUTS4 for most of the regions and combinations of several NUTS4 for the larger cities. In Denmark, the information is available for the 35 city-regions. Because the NUTS III regions for Germany are not always functional units, the analysis for this country is at the level of 93 planning regions, which are functional regions in the sense of travel to work areas and comprise at least one city and its surroundings. For a more detailed description of the German data, see Fritsch (2007).

Table 2.

Descriptives concerning the distribution of the creative class among European regions in 2002*, as percentage of overall employment

	Mean	Median	Minimum	Maximum	Standard deviation
Creative core	3.43	3.50	0.22	8.69	1.58
Creative professionals	9.15	8.57	2.59	20.58	3.44
Creative class A	12.58	12.18	2.84	29.27	4.80
Bohemians	0.46	0.36	0.0	4.09	0.39
Creative class B	13.03	12.67	2.85	33.36	5.09

* The data for Switzerland and the UK refer to the year 2001.

unevenly distributed across geographic space. For example, the lowest share of the creative class records a share of almost 3 percent, while the maximum value amounts to 33 percent.

Figure 1 depicts the spatial differences of the share of creative people within the different countries in the sample. The line in the middle of the shaded box is the median value. The shaded box indicates the values of the second and the third quartile (i.e., between the 25th and 75th percentile). The lines extended from the boxes indicate the adjacent values. As far as the overall creative class (defined as creative class B) is concerned, we observe some remarkable differences between the eight European countries. Generally speaking, the Netherlands is well endowed with the creative class, while Norway is lagging behind. In the UK, one can observe the sharpest differences between regions as far as the creative class is concerned, with the city of London as a major outlier.⁵

5. How to explain the spatial distribution of the creative class in Europe?

In order to analyze the reasons of the uneven spatial distribution of the creative class across Europe, we conduct multiple regressions that allow the assessment of the relative importance of the different factors⁶. The dependent variable in these regressions is the share of employees with creative occupations in the total number of regional employment in the year 2002. We split the creative class into three categories; the creative core, the creative professionals and the bohemians because different explanations may apply for these different types of creative occupations. Hence, we run various regressions explaining the European spatial pattern for each of these categories separately.

Three types of influences on the share of creative occupations have been tested. The first type of influences is *regional culture*, which is closely associated with particular cultural qualities of regions such as tolerance and openness. Following Florida, we used two indicators to account for this effect⁷. The first indicator is the share of Bohemian occupations in the total workforce in each region that, according to Florida (2004), should have a positive effect on the presence of other creative occupations.

⁵ For more detailed information on the distribution of the different categories of creative occupations across the European regions, see Boschma and Fritsch (2007).

⁶ Many have criticized Florida's analyses that would rest on suggestive correlations rather than causality (e.g., Peck, 2005; Markusen and Schrock, 2006).

⁷ Another indicator of tolerant and open urban climate that has been applied by Florida in his analysis for the United States is the so-called Gay-index which measures "the over- or under-representation of coupled gay people in a region relative to the United States as a whole" (Florida, 2004, 333). This type of index could not be calculated for the European countries because of a lack of data at the NUTS 3 level.

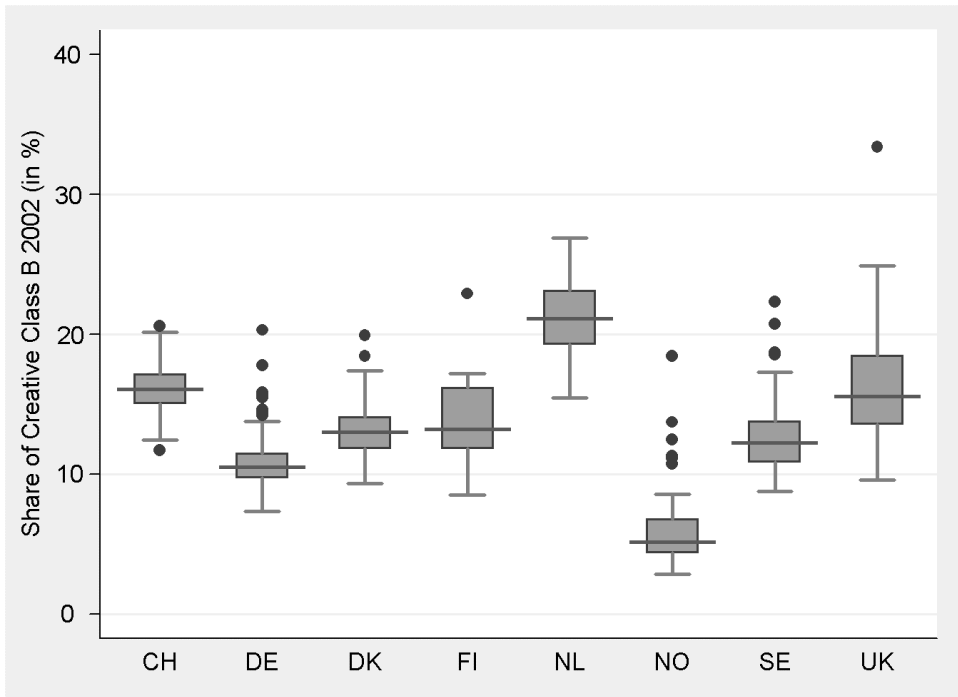


Fig. 1: Spatial distribution of the creative class (defined as Creative Class B) in each of the European countries in 2002

The idea is that a high proportion of Bohemians indicates a kind of local culture, lifestyle and set of values that are different from the mainstream. Being artistically creative, bohemians add a meaning of liveliness to a particular place ('the place to be') and tolerance (openness to different lifestyles and values), which makes a region attractive for the other two categories of the creative class. The second measure is the share of foreign born people, which is expected to have a positive effect on the presence of creative occupations⁸. Following Florida, this *openness index* is used as a proxy for the degree of open mindedness, tolerance, cultural diversity and openness to newcomers.

The second type of explanatory factors can be labeled *regional facilities*. Firstly, the *public provision index* has been measured by the share of the labor force working in public health care and public education (NACE codes 80 and 85). Secondly, the so-called *cultural opportunity index* is given by the share of the workforce, which is active in cultural and recreational activities.⁹ Following Florida, we expect that both kinds of facilities are highly appreciated by the creative class. For analytical reasons, we have excluded those professions from the creative class that could be associated with these two indicators, in order to empirically disentangle the dependent from the independent variables.

The third type of explanation concerns a pure economic indicator. It is measured as the *annual employment growth rate* in the preceding ten years (1993–2002); this indicates job opportunities in a region. To control for country-specific differences (e.g., with regard to the measurement of creative

⁸ A better indicator would have been the rate of labor market participation of immigrants because, among other things, it reflects how open the region is to absorb and integrate people of different descent and cultures into the regional labor market. However, such an indicator was not available in the European countries at the regional level.

⁹ We have assigned these types of activities to the NACE codes 553 (restaurants), 554 (bars), 921 (activities in the field of film and video), 922 (radio and television), 923 (entertainment), 925 (libraries, public archives, museums and other cultural activities) and 926 (sports).

Table 3.

Descriptive statistics for variables

Variable	Mean	Median	Minimum	Maximum	Standard deviation
Creative core(ln)	1.074	1.252	-1.529	2.163	0.659
Creative professionals (ln)	2.137	2.149	0.953	3.024	0.407
Creative class (ln)	2.446	2.500	1.045	3.377	0.443
Bohemians (ln)	-1.112	-1.032	-5.048	1.409	0.907
Openness index (ln)	1.674	1.674	-0.724	4.018	0.770
Public provision index (ln)	2.144	2.248	1.155	3.000	0.414
Cultural opportunity index (ln)	0.276	0.256	-1.061	2.637	0.561
Employment growth 1993-2002	1.076	0.875	-2.780	8.232	1.531

occupations), we included country dummies.¹⁰ Table 3 provides descriptive statistics for the variables included in the analysis.

Table 4 shows the results of the regression analyses with the shares of creative population as a dependent variable. We present the standardized regression coefficients (beta coefficients) here, which allow the direct comparison of the relative importance of the different variables (Greene, 2003). The analyses show that the share of bohemians in a region has a considerable positive impact on the share of the creative core and creative professional employment. We have, however, to be cautious in interpreting this result because the share of bohemians shows a high correlation (0.66) with the other indices of the creative class. Moreover, there is also a high correlation between the share of bohemians and the cultural opportunity Index (0.63). Due to the fact that the presence of bohemians could be a result of rich employment opportunities in cultural industries as indicated by the cultural opportunity index, all regressions have been run in three different versions. While model I contains all variables, the share of bohemians is omitted in model II. Model III includes the bohemians but excludes the cultural opportunity index. There is, indeed, a considerable higher coefficient for the cultural opportunity index if the share of bohemians is omitted (model II). However, comparing the results of the different models indicates that the impact of the share of bohemians is considerably stronger than that of cultural opportunity.

The regression analyses tend to confirm our expectations. First, there is a close relationship between the presence of Bohemians and the other creative class categories at the regional level in Europe. Even when the cultural opportunity index is included, the beta coefficients for the share of bohemians show the highest values in the model. The openness index has the expected positive impact on the presence of the creative class, but the effect is relatively small. This leads us to conclude that a regional climate of culture and openness tends to attract members of the creative class. By contrast, the public provision index (the level of supply in health care and education) only has a significantly positive effect on the regional share of the creative core employment. For creative professionals, it is significantly negative, while for the creative class (A) as a whole, it is insignificant. Thus, in general, the provision of public facilities has a slight, if any, impact on the presence of the creative class.

According to the beta coefficients, the annual employment growth in the preceding years in a region has the second largest impact on the regional share of creative occupations. The effect is relatively low for the creative core and for the bohemians, but quite pronounced for the creative professionals and the overall creative class (A). Finally, population density seems to only have a positive

¹⁰ The results for these country-dummies are not reported here due to space-limitations. To account for the differences that still exist between East and West Germany (Fritsch, 2004), we included separate dummies for the two parts of the country.

Table 4.

Regressions for explaining the share of creative population

	<i>Creative core (ln)</i>			<i>Creative professionals (ln)</i>		
	I	II	III	I	II	III
Share of bohemians (ln)	.5378** (7.95)	–	.5485** (9.05)	.4118** (6.51)	–	.4516** (8.40)
Openness index (ln)	.0817 (1.89)	.1815** (4.09)	.0267 (0.61)	.0889* (2.57)	.1675** (4.38)	.1115** (2.93)
Public provision index (ln)	.2226** (3.85)	.2075** (3.02)	.2991** (6.06)	-.1117* (2.50)	-.1195* (2.17)	-.0958* (2.53)
Cultural opportunity index (ln)	.0078 (0.15)	.2742** (4.86)	–	.0828 (1.86)	.2862** (6.97)	–
Employment growth 1993–2002	.0931** (2.90)	.1681** (4.67)	.1238** (4.18)	.2170** (5.97)	.2731** (6.45)	.2218** (6.22)
Population density (ln)	.0050 (0.10)	.0984 (1.61)	.00099 (0.19)	.0613 (1.41)	.1294** (2.58)	.0690 (1.61)
R ^{2adj}	0.8447	0.7946	0.8404	0.8961	0.8671	0.8941
F-value	129.86**	103.93**	134.81**	213.49**	198.26**	230.26**
No of observations	443 ^a	444 ^a	468	443 ^a	444 ^a	468

Notes: Beta coefficients, robust estimates (t-values in parentheses); country dummies included; a: Switzerland missing; * statistically significant at the 5%-level; ** statistically significant at the 1%-level.

Table 4 (continued)

	<i>Creative core (ln)</i>			<i>Creative professionals (ln)</i>	
	I	II	III	I	II
Share of bohemians (ln)	.4613** (7.70)	–	.4949** (9.64)	–	–
Openness index (ln)	.0938** (2.88)	.1812** (4.95)	.0874* (2.51)	.2102** (5.75)	.3432** (9.23)
Public provision index (ln)	.0096 (0.23)	-.0005 (0.01)	.0516 (1.49)	-.0143 (0.27)	.2109** (4.40)
Cultural opportunity index(ln)	.0647 (1.52)	.2926** (6.77)	–	.4944** (10.19)	–
Employment growth 1993–2002	.1929** (6.21)	.2560** (6.74)	.2091** (6.84)	.1377** (3.49)	.2158** (5.44)
Population density (ln)	.0375 (0.91)	.1447* (2.29)	.0447 (1.08)	.1369** (2.81)	.1337** (2.52)
R ^{2adj}	0.9009	0.8641	0.8994	0.8245	0.7757
F-value	226.08**	195.78**	238.48**	117.32**	102.97**
No of observations	443 ^a	444 ^a	468	443 ^a	468

Notes: Beta coefficients, robust estimates (t-values in parentheses); country-dummies included; a: Switzerland missing; * statistically significant at the 5%-level; ** statistically significant at the 1%-level.

impact on bohemians, but it shows no effect on the other indicators of the creative class. This result suggests that the creative class is not attracted to highly urbanized regions *per se*, but to regions with a particular regional climate.

6. The effect of talent and creative class on regional growth in Europe

An analysis of the effects of the creative class on regional growth requires data on the creative class for past time periods, which have to be related to indicators of regional development over the subsequent years. Unfortunately, such data are not available for most of the European countries. We, therefore, had to restrict our analysis to Germany and the Netherlands covering 133 regions. These two countries provide indicators for the qualification of the regional workforce and for the creative class in the year 1996 as well as information on regional employment change over the 1996-2002 period. The indicator for qualification has been constructed on the basis of the International Standard Classification of Education (ISCED, 1997). We used the share of group 5A and 6 from this classification in regional employment as measure for the qualification of the workforce, which can be associated with the level of bachelor degree or higher. In the regressions, we include separate dummy-variables for East and West Germany in order to account for the obviously different growth regimes in the two parts of the country (Fritsch, 2004). Population density is included as a control variable for all kinds of regional effects.

If no indicator for creative class is included in the regression (model I in table 5), the effect of qualification on subsequent employment growth is positive. In models that contain the creative class but not qualification, the positive impact of creative people is, however, much stronger than that of the qualified workforce (model II). Including our qualification measure as well as indicators of the creative class clearly shows a highly significant positive impact of creativity, while the qualification indicator remains largely insignificant (models III–VII). Although there is some correlation between qualification and the various creative class indicators, the results of the regressions clearly suggest that being in creative occupation matters is more significant in regard to regional growth than being educated¹¹. The type of profession in which people acquire and apply their knowledge obviously plays a role for economic development. This holds for all categories of the creative class. Finally, the effect of population density remains negative, suggesting that more urbanized regions have lower employment growth than less densely populated areas.

7. Conclusion

The results of our empirical analysis for regions in eight European countries tend to confirm most of the hypotheses on the creative class and its effect on regional development as suggested by Florida (2004). We find that the creative class is highly unevenly distributed across Europe. A regional climate of tolerance and openness has a positive effect on the regional share of the creative class. The creative class is not attracted to highly urbanized regions *per se*. The provision of public facilities in health care and education has only a minor, if any, impact on the presence of the creative class. Regional employment growth also has a positive effect on the share of the creative class. We also found that the creative class had a positive and significant effect on regional employment growth. The results of our analysis indicate that being in creative occupation often mattered more than being educated for regional employment growth.

We consider our analysis as a first step towards a better understanding of the relationship between regional climate, creative class and regional growth in Europe. No doubt that better indicators to measure creativity are a prerequisite for accomplishing such a task (Rantisi and Leslie, 2006). We need

¹¹ This result is similar to what was found in a study on 50 Dutch cities (Marlet and Van Woerkens, 2004). Based on these results, they conclude that Florida proposed a better indicator for human capital, because creative capital accounts for what people do/actions? (i.e., using their skills and knowledge in a creative manner), rather than what people simply know (as proxied by educational level).

Table 5.

The effect of the creative class and talent on regional growth 1996–2002 in the Netherlands and Germany

	I	II	III	IV	V	VI	VII
Talent 1996 (ln)	6.961** (3.80)	–	1.532 (0.61)	1.366 (0.51)	4.393* (2.04)	3.546 (1.85)	0.848 (0.34)
Creative class A 1996 (ln)	–	19.553** (4.95)	17.138** (3.06)	–	–	–	–
Creative core 1996 (ln)	–	–	–	9.277** (2.78)	–	–	–
Creative Professionals 1996 (ln)	–	–	–	–	10.900* (2.17)	–	–
Bohemians 1996 (ln)	–	–	–	–	–	4.696** (4.09)	–
Creative class B 1996 (ln)	–	–	–	–	–	–	18.665** (3.38)
Population density 1996 (ln)	-2.138** (2.91)	-1.527* (2.42)	-1.743* (2.41)	-2.484** (3.41)	-1.704* (2.27)	-3.147** (4.27)	-1.836* (3.58)
Constant	7.399 (1.26)	-46.966** (3.17)	-41.869* (2.46)	7.586 (1.33)	-25.398 (1.57)	24.334** (3.53)	-45.377** (2.74)
R ²	0.835	0.8459	0.845	0.843	0.840	0.853	0.847
F-value	167.93**	182.08**	145.02**	142.96**	139.18**	154.25**	147.59**
No. of observations	133	133	133	133	133	133	133

Notes: * statistically significant at the 5%-level; ** statistically significant at the 1%-level. Coefficients of dummies for location in East and West Germany omitted.

to define more precisely, for instance, which workers are really creative, in order to link them more directly to the other variables in the analysis.¹² We should also try to have a better understanding of the relationship between creativity and education, as well as the role of knowledge spillovers. As mentioned before, human capital (including the role of knowledge spillovers) and creative capital are two different explanations for regional growth. In empirical analyses, these need to be disentangled analytically. Does the presence of highly educated and creative people *per se* contribute to regional growth, or do they mainly generate (localized) knowledge spillovers that have an additional effect on regional growth? Another key question concerns the relationship between a climate of tolerance, the presence of the creative class and regional growth. We need better indicators to measure a tolerant climate or culture of openness. Furthermore, we need to be able to better specify through which mechanisms a regional climate of tolerance may affect regional growth, and in what ways such a climate could be created by public policy (Peck, 2005).

References

Andersen, K. V. and M. Lorenzen (2005): *The Geography of the Danish Creative Class: A Mapping and Analysis*, Copenhagen Business School. <http://www.kreativeklasse.dk/index.php?id=75>.

¹² Boschma and Fritsch (2007) find evidence for a positive effect of creative people on the level of new business formation and the number of patents generated in the respective region.

- Boschma, R. and M. Fritsch (2007): Creative Class and Regional Growth—Empirical Evidence from eight European Countries, Jena Economic Research Paper 066-2007 (www.jenecon.de), Friedrich-Schiller-University and Max Planck Institute of Economics, Jena, Germany.
- Florida, R. (2002a): The Economic Geography of Talent, *Annals of the Association of American Geographers*, 92 (4), 743–755.
- Florida, R. (2002b): Bohemia and economic geography, *Journal of Economic Geography*, 2, 55–71.
- Florida, R. L. (2003): Entrepreneurship, Creativity and Regional Economic Growth, in: David M. Hart (ed.), *The emergence of entrepreneurship policy: governance, start-ups, and growth in the US knowledge economy*, Cambridge: Cambridge University Press.
- Florida, R. L. (2004): *The Rise of the Creative Class*, revised paperback edition, New York: Basic Books.
- Fritsch, M. (2004): Entrepreneurship, Entry and Performance of New Businesses Compared in two Growth Regimes: East and West Germany, *Journal of Evolutionary Economics*, 14, 525–542.
- Fritsch, M. (2007): The Geography and the Effect of Creative People in Germany, Jena Economic Research Papers 001–2007 (www.jenecon.de), Friedrich-Schiller-University and Max Planck Institute of Economics, Jena, Germany.
- Glaeser, E. L. (2004): Review of Richard Florida's *The Rise of the Creative Class*, <http://www.creativeclass.org/acrobat/GlaeserReview.pdf>, (16.03.2006).
- Greene, W. H. (2003): *Econometric Analysis*, 4th edition, New York: Prentice Hall.
- Greif, S. and D. Schmiedl (2002): Patentatlas Deutschland—Dynamik und Strukturen der Erfindungstätigkeit, Munich: Deutsches Patent- und Markenamt.
- Lang, R. and K. Danielsen (2005): Review Roundtable: Cities and the Creative Class, *Journal of the American Planning Association*, 71, 203–220.
- Lee, S. Y., R. Florida and Z. Acs (2004): Creativity and Entrepreneurship: A Regional Analysis of New Firm Formation, *Regional Studies*, 38, 879–891.
- Markusen, A. (2006): Urban Development and the Politics of a Creative Class: Evidence from the Study of Artists, *Environment and Planning A*, 38, 1921–1940.
- Markusen, A. and G. Schrock (2006): The Artistic Dividend: Urban Specialization and Economic Development Implications, *Urban Studies*, 43, 1661–1686.
- Marlet, G. and C. van Woerkens (2004): Skills and creativity in a cross-section of Dutch cities, Koopmans Research Institute, Utrecht, Discussion Paper Series 04–29.
- Peck, J. (2005), Struggling with the creative class, *International Journal of Urban and Regional Research*, 29 (4), 740–770.
- Rantisi, N.M. and D. Leslie (2006), Guest editorial. Placing the creative economy: scale, politics, and the material, *Environment and Planning A*, 38, 1789–1797.