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Tolerance, aesthetics, amenities or jobs? Dutch city attraction to the creative class

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Abstract

Richard Florida stated that it is not (only) job opportunities or urban amenities which attract creative high-educated people to cities but, rather, tolerance and aesthetics. We have tested this hypothesis in a cross section of Dutch cities. Our conclusion is that the tolerance/creative class nexus empirically fails to materialize for the Netherlands. However, the aesthetic assets of cities do provide a strong explanation for both share and growth of the creative class in Dutch cities. Beside that, job opportunities and urban amenities are still the most important factors influencing the choice for a place of residence.

Keywords: urban economics, human capital, creative class, tolerance, urban amenities, city aesthetics

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1. INTRODUCTION

Ever since the publication of Richard Florida's *The Rise of the Creative Class*,¹ Dutch local policy makers have been trying to stimulate their local economies by attracting the so-called Creative Class. In his book Florida states that those cities where creative people (the creative class) tend to live are able to attract more (high tech) industries and perform better economically.

Most Dutch cities and towns try to attract this creative class by handing over old factory buildings to artists, charging no rent or very little. They hope that this *broedplaatsenbeleid* (policy to create 'cauldrons of creativity') will in the near future attract the creative class and thus stimulate the local economy. 'Hope' is the correct word here since very little is known about what exactly pulls creative, highly-educated people to certain cities.

Florida's 'key contribution' to the economic development literature is – as he claimed – an answer to the question why some places are better able than others to generate, attract, and retain creative people: "In my view, it is not amenities that account for the why. What accounts for the why is, simply put, openness.... I have come to refer to it as 'Tolerance' ”² According to Florida it is not (or not only) job opportunities or urban amenities that attract the creative class to a city, but openness and tolerance towards a diverse urban climate.

Creative and talented people are often individualists with alternative preferences, diverse lifestyles and non-conformist behavior. That is why cities that are open to and tolerant of a wide range of people and its socially and ethnically diverse backgrounds are successful in attracting the creative class. Creative people feel drawn to urban tolerant atmospheres and they like urban cosmopolitan experiences.³ Successful cities are – according to Florida – not consumer cities⁴, nor social capital cities⁵, but places

¹ R. Florida, 2002: *The Rise of the Creative Class, and how it's transforming work, leisure, community and everyday life* (Basic Books, New York).

² R. Florida, 2004: Response to Edward Glaeser's review of *The Rise of the Creative Class*, <http://www.creativeclass.org/acrobat/ResponsetoGlaeser.pdf>.

³ Florida, *Rise of the Creative Class*, pp. 165-189.

⁴ E. L. Glaeser, J. Kolko, A. Saiz, 2001: 'Consumer City', in: *Journal of Economic Geography*, pp.27-50.

⁵ R. D. Putnam, 2000: *Bowling Alone. The collapse and revival of American community* (Touchstone, New York).

with “low barriers to entry” which are “known for diversity of thought and open-mindedness”.⁶

In his later work Florida has added aesthetics as another important factor or a city’s appeal to creative, highly-educated people.⁷ By aesthetics Florida means a city’s aesthetic qualities, both physical (fine buildings in the urban environment) and natural (the scenery outside the city). In his earlier work Florida already referred to the importance of authentic inner cities, both in the sense of buildings and cultural venues.⁸ In a recent survey by Richard Florida in cooperation, with the Gallup-organization young recent university graduates stated that the aesthetic qualities of cities are the most important factor determining their choice for a place to live.⁹

‘Aesthetic’ cities which are tolerant and open to cultural and ethnical diversity attract creative people, who are in turn responsible for economic prosperity in these cities. This view of Richard Florida is opposed to traditional views in urban economics, where living patterns of households are mainly explained either from job opportunities or from amenities .

In traditional urban theory, people were not supposed to be attracted by things like tolerance or aesthetics, but by jobs. Location decisions of households were seen as a trade off between (cheep) residence outside the city center and travel costs to work within the city center.¹⁰

Other urban scholars emphasized the role of amenities as a major attraction for people in their location decision. At first the amenity literature was mainly concerned with natural amenities like climate and environmental beauty.¹¹ Later, urban amenities like

⁶ R. Florida, 2005: *Cities and the Creative Class* (Routledge, New York), p. 130.

⁷ R. Florida, 2005: *The Flight of the Creative Class: The new global competition for talent* (HarperCollins Publishers, New York); R. Florida, 2004: *Revenge of the Squelchers: The great creative class debate* (www.creativeclass.org).

⁸ Florida: *Rise of the Creative Class*, p. 228

⁹ R. Florida, D. Miller Steiger, D. Wilson, 2006: *Cities and Subjective Well-Being* (Gallup Organization and George Mason University, FORTHCOMING)

¹⁰ W. Alonso, 1964: *Location and land use* (Harvard University Press, Cambridge).

¹¹ E. L. Ullman, 1954: ‘Amenities as a factor in regional growth’, in: *Geographical Review*, 44, p. 119-132; P. R. Mueser, P. E. Graves, 1995: Examining the role of economic opportunity and amenities in explaining population redistribution, in: *Journal of Urban Economics*, 37(2), pp. 176-200.

culture and cafés were also seen as a decisive reason for people to live in a particular place.¹²

In this view, people's decisions where to live no longer depend on the availability of jobs, but on specific living preferences like natural and urban amenities (while jobs follow people; business is attracted to places where people like to live in)¹³. But although the role of amenities is generally accepted, and more and more evidence is coming up for a connection between amenities and growth, this does not mean that job opportunities are no longer important in the location decisions of households.¹⁴ How does Florida's view fit into this tradition of urban economics? Florida agrees that people do not just follow jobs. But natural and urban amenities are not, for him, enough as an alternative explanation for a city's appeal. Creative and highly-educated people prefer cities which have aesthetic assets and which are open and tolerant to cultural and ethnical diversity. Cities which combine these qualities are able to attract creative people and, as a result, jobs. Since Florida also assumes that jobs follow people, business will move to such places with high stocks of human (creative) capital.

The Dutch case

Tolerance as an economic force sounds very familiar to the Dutch in accounts of their economic history. The 17th-century 'Golden Age' is widely accepted to be related to Dutch tolerance towards (highly-skilled) immigrants with various religious backgrounds.¹⁵ But in the present paper we are concerned not with the position of the Netherlands among other countries, but rather with differences between regions within the Netherlands. How do tolerance features differ between cities in relation to differences in attractiveness to creative people?

¹² Glaeser, 2001: *Consumer City*; T. N. Clark, 2003: Urban amenities: lakes, opera, and juice bars do they drive development?, in: *The City as an Entertainment Machine*, Research in Urban Policy, 9, pp. 103-140.

¹³ Cf. M. Boarnet, 1994: 'The monocentric model and employment location', *Journal of Urban Economics* XXXVI (1994), pp. 79-97, and: S. Kim, 2002: *The Reconstruction of the American Urban Landscape in the Twentieth Century*, Working paper series, Nr. 8857 (Cambridge MA, National Bureau of Economic Research, 2002).

¹⁴ J. Compton, R. A. Pollak, 2004: *Why are power couples increasingly concentrated in large metropolitan areas*, NBER Working Paper 10918.

¹⁵ J. I. Israel, 1995: *The Dutch Republic. Its Rise, Greatness and Fall 1477-1806* (Oxford University Press, Oxford).

In a previous paper we found significant positive correlations between the existence of a large creative class and local employment growth in The Netherlands.¹⁶ Business really appears to be attracted to places with high levels of creative, highly-educated people. We also found that Florida's creative class is a better measure for local stocks of human capital than education levels are. Dutch cities with high levels of creative class perform economically better than other Dutch cities. This would seem to confirm the economic relevance of our question – to what extent tolerance and aesthetics explain the residential patterns of the creative class in the Netherlands.

In this paper we will try to find out which factors actually drive the Dutch creative class. We will explore all possibilities mentioned above: tolerance and aesthetics, amenities, and job opportunities. We will do this in a cross-section of Dutch cities, using a large database of city-specific indicators developed for our yearly comparison of the country's fifty largest municipalities.¹⁷ Our conclusion will be that it is *not* tolerance which drives the creative class in the Netherlands. Aesthetics, however, does provide an additional explanation for the preferences shown by Dutch creative people in choosing a city of residence – complementing more traditional explanations from amenities and job opportunities.

2 THE GEOGRAPHY OF THE DUTCH CREATIVE CLASS

Richard Florida's creative class is a category of people who are not necessarily highly educated but who are engaged in creative, innovative jobs. His creative class covers about 30% of the American labor force. This creative class does not only include writers, designers, musicians, painters and artists, but also scientists, managers and people in computer, engineering, education, healthcare, legal and financial occupations.¹⁸

In our previous paper we described the way we have constructed a Dutch creative class. We used a narrower definition than Florida's, resulting in a 19% share of creative people in the total Dutch labor force.

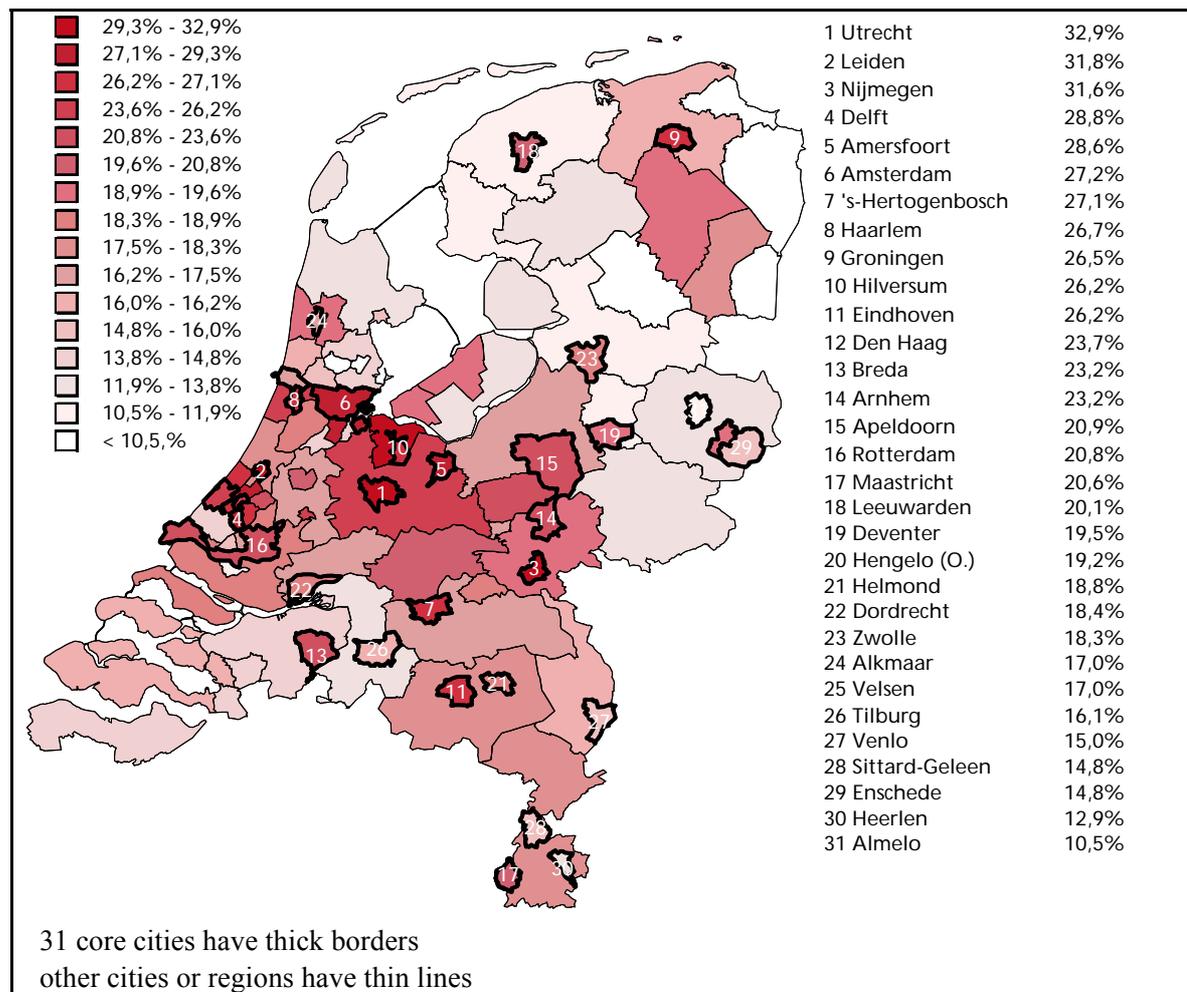
¹⁶ G. A. Marlet, C. M. C. M. van Woerkens, 2004: *Skills and creativity in a Cross-section of Dutch Cities*, Discussion Paper Series 04-29, Utrecht School of Economics, Universiteit Utrecht.

¹⁷ G. A. Marlet, C. M. C. M. van Woerkens, 2005: *Atlas voor gemeenten* [The Dutch Places Rated Almanac].

¹⁸ Florida, *Rise of the Creative Class*, pp. 328, 329.

We used profession data (EBB) on a city level from the Dutch statistical institute CBS. The data contains the professions of a sample of inhabitants of each city. We have been more precise in selecting creative jobs. While Florida included, for example, *all* people with educational and managerial jobs in the creative class, it was in fact his own definition of creative and innovative jobs which led us to leave out several managerial, educational, administrative and governmental jobs.¹⁹ We have determined and mapped out not where creative people work but where they *live*. This is in line with Florida's creative capital theory, claiming that where creative people live the economy will grow faster and thus implying that, in fact, jobs follow people. The places where the creative class tends to live in the Netherlands are mapped below.

Map 1 The geography of the Dutch creative class (2003)



¹⁹ For a detailed overview of the used definitions and methods see: Marlet, 2004: *Skills and creativity*, Appendix.

Map 1 suggests that creativity is concentrated in the middle and western part of the country. The ranking of the 31 core cities in the Netherlands shows that the central city of Utrecht, the fourth biggest city of the Netherlands, has the largest share of people belonging to the creative class, followed by Leiden and Nijmegen. All three cities have universities, which suggests there is a correlation between universities and stocks of creativity. But five out of the other seven top 10 cities do not have universities; and university towns located in the periphery – especially Maastricht in the south and Enschede in the east – are not among the top-creative cities in The Netherlands, Enschede even among the bottom 10. It may therefore be not universities as such that matter, but the higher concentration of universities in more agglomerated regions.

The more agglomerated western part of the Netherlands (Randstad) does have relatively higher concentrations of creative class as compared to the rest of the country (see Table 1). The north in particular has relatively small amounts of residents belonging to the creative class.

Within the regions the creative class tends to live within cities rather than in suburbs or the countryside. In the 31 core cities of the Netherlands 23.9% of the total labor force belongs to the creative class. In the rest of the country the creative class accounts for 17.2% of the total labor force. These findings are quite similar to the geography of creativity in the U.S.²⁰

This Dutch geography of creativity might confirm what Jane Jacobs has suggested – that the advantage of cities for creative, highly-educated people lies in the density of diverse people and companies, which increases possibilities for face-to-face contact, knowledge accumulation and job opportunities.²¹

Table 1 Regional differences in share and growth of the creative class

	Share 1996	Share 2004	Increase of share
Netherlands	16.2%	19.4%	3.3%
Core cities (K31)	20.8%	23.9%	3.2%
Rest of the country	13.8%	17.2%	3.3%
West (“Randstad”)	19.2%	22.2%	3.0%
North	11.7%	15.1%	3.4%
East	14.5%	17.6%	3.2%
South	13.8%	17.6%	3.8%

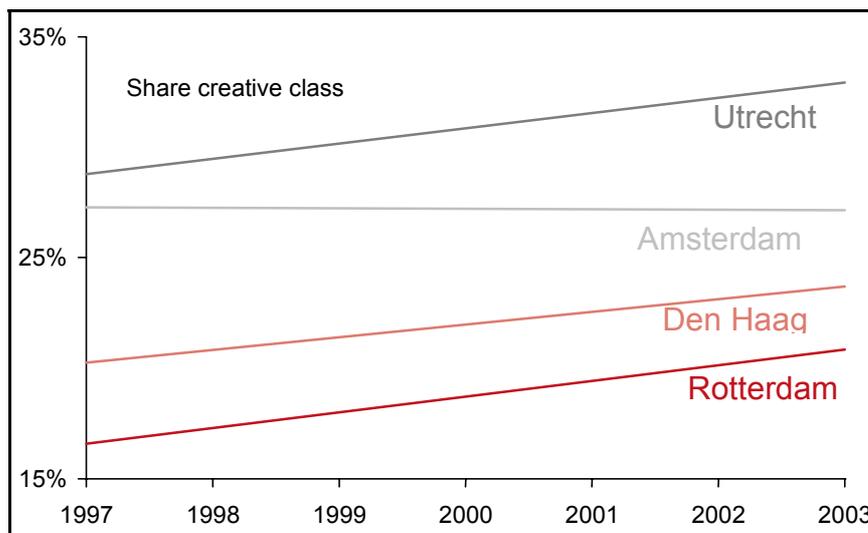
²⁰ Florida, 2002: *The Rise of the Creative Class*.

²¹ J. Jacobs, 1984: *Cities and the Wealth of Nations* (New York, Random House).

However, growth figures (see table 1) show that the Dutch creative class no longer tends to move towards cities, nor towards the western part of the country. The increase in share of the creative class during the years 1996–2004 was roughly the same in cities and in the rest of the country. Moreover, the increase was smaller in the more agglomerated western part of the country (3.0%) as compared to the periphery (3.5%). Especially the southern parts of the Netherlands saw a more than average increase in the share of people belonging to the creative class (3.8%).

Most of the cities with the largest increases in share of creative class, like Amersfoort, Nijmegen and Den Bosch, seem to lie in regions just outside the most agglomerated Randstad region. The central capital city of Amsterdam has no growth at all. Among the four large cities in The Netherlands, Rotterdam is the city whose creative class is increasing most significantly (figure 1).

Figure 1: Growth of the creative class in the four largest cities of the Netherlands (1997-2003)



The geography of the creative class presents a clear picture. The creative class is concentrated in the cities in the agglomerated Western part of the country while seeing most of its growth outside that region.

The question is why the Dutch creative class tends to concentrate in certain cities in the western part of the country. Is it because of job opportunities, as standard economic literature suggests? Or is it because of their amenities? Or does the creative class behave differently from average people in the sense that they search primarily for aesthetically satisfying cities and a tolerant, open and diverse urban atmosphere?

A related question is why the creative class is no longer growing in the creative centers. Are congestion forces becoming more important than agglomeration forces in the Netherlands? Before we are able to answer these questions, a methodological problem needs to be tackled: How do we measure tolerance and aesthetics? And how amenities and job opportunities?

3 MEASURING TOLERANCE, AESTHETICS, AMENITIES, AND JOBS

Tolerance

In his *Rise of the Creative Class* Florida suggests that local tolerance and openness can be measured by the amount of artists and gays living in the city. The importance of artists is, according to Florida's theory, not that they are artists but the fact that they are (or, to be precise, the *bohemian index*) is a good indicator for a city's level of openness and tolerance. Both artists, gays, and the heterogeneous creative class go where a tolerant and open urban climate appears.²²

We have used similar indicators for tolerance. We calculated the **Gay scene** in Dutch cities using the subscriber postcodes of two gay-magazines (*Squeeze* and *Gaykrant*) and the postcodes of members of the Dutch Gay organization COC. The local average of these three sources as a percentage of total population is our proxy for the size of the local gay scene. Florida finds a strong correlation between the gay index and share of creative class. He regards the gay-index as a "leading indication" for a place that is open and tolerant because both creative class and gays want places where they can "live as they please without raising eyebrows".²³

²² Florida, *Cities*.

²³ Florida, *Rise of the Creative Class*, p. 258.

Figure 2 Top-10 Dutch cities with largest gay scene (index, 100=largest)

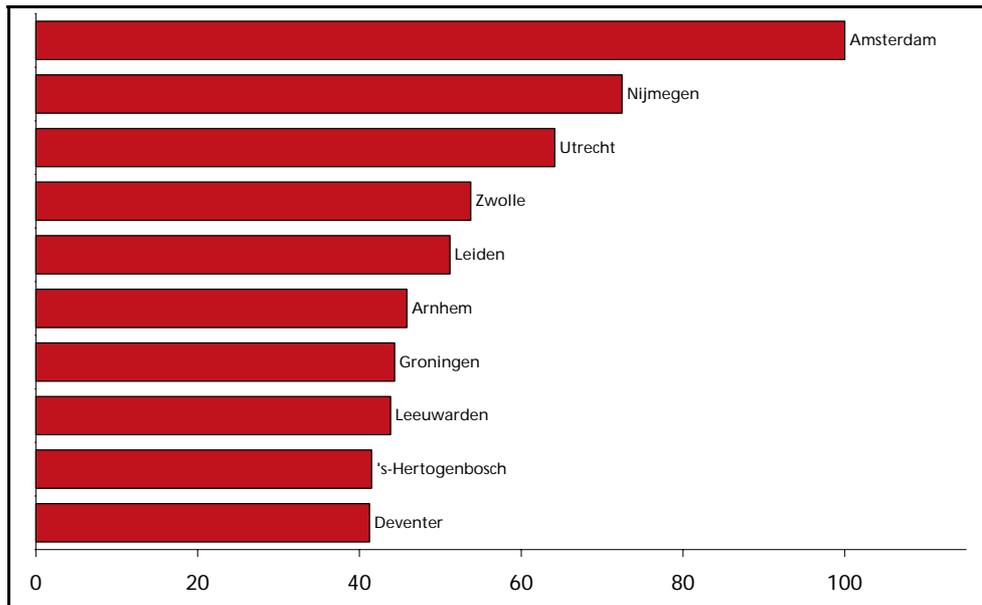
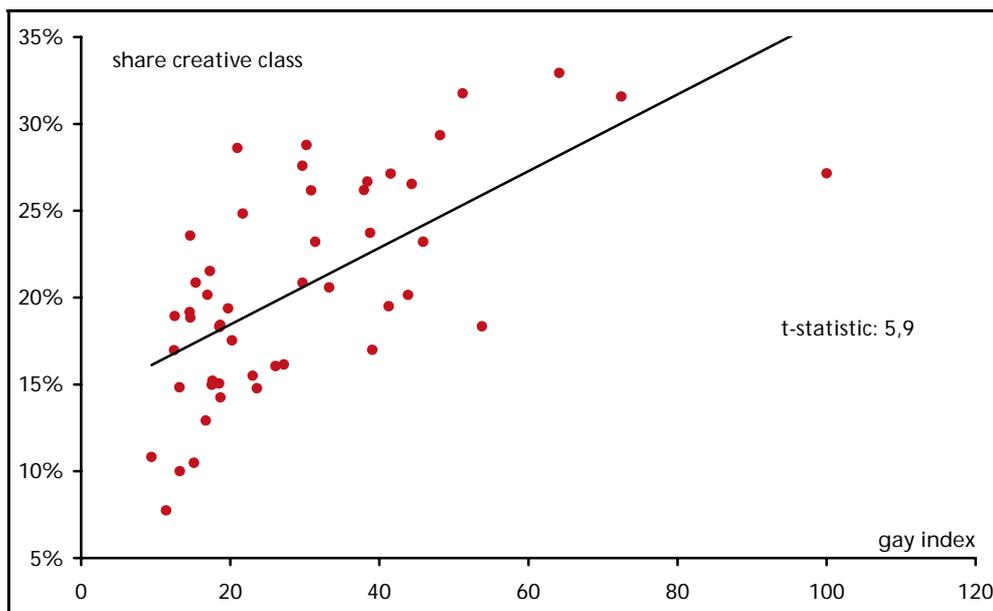


Figure 2 shows the top 10 cities with largest gay scene in the Netherlands with two of the biggest cities in the western part of the country, Amsterdam and Utrecht, ranking first and third, and a smaller city in the east, Nijmegen, since the 1960s known for its large left wing gay community, ranking second. Figure 3 shows a fairly strong simple correlation between the gay index and share of creative class in the fifty largest municipalities in the Netherlands.

Figure 3 Gays and creative class tend to live in the same cities



Our second indicator for tolerance is a Dutch *bohemian index*. Richard Florida's artists, measured as the so-called bohemian index, are in fact another proxy for tolerance and openness to diversity. According to Florida this bohemian index explains the rise of the creative class in American cities because artists, like gays, tend to live in tolerant and open cities –which is exactly the urban environment where the creative class also prefers to live. He finds correlations between the bohemian index on the one hand, and share of creative class, population growth and local employment growth on the other.²⁴

As a starting point for constructing our Dutch bohemian index we have chosen Florida's definition of the bohemian index, which includes writers, designers, musicians and composers, actors and directors, painters and sculptors, photographers and artist printmakers, dancers, artists and performers.²⁵ However, local and regional data on the presence of artistic jobs are not available at the Dutch bureau for statistics (CBS). We therefore used a different source: the membership lists of various unions united in the Federation of Dutch artists unions. Not all memberships could be included. Some membership lists were unavailable and some of the unions were considered to be less relevant for the construction of the bohemian index. Accordingly a limited number of bohemians have been included in our Dutch bohemian index: designers, visual artists, photographers, interior designers, composers, dancers, authors, painters, sculptors and ceramic artists.²⁶

Figure 4 shows the top 10 cities with the largest share of bohemians in the total population. Amsterdam is, again, ranked first and Utrecht again third. The city of Arnhem, with a well known academy of arts and fashion (fashion designers Victor & Rolf graduated there), is ranked second on our Dutch bohemian index.

²⁴ Florida, *Rise of the Creative Class*, p. 260.

²⁵ Florida, *Rise of the Creative Class*, p. 333.

²⁶ The number of memberships collected was almost 14,000. Of course, not all artists are union members. Therefore, the national number of these artists is taken from the Dutch bureau of statistics (CBS) and used to rescale the number of memberships of the Federation (factor is about 5). This rescaled number of artists divided by the size of the population results in a local bohemian index.

Figure 4 Top-10 Dutch cities with largest artists community (% of population)

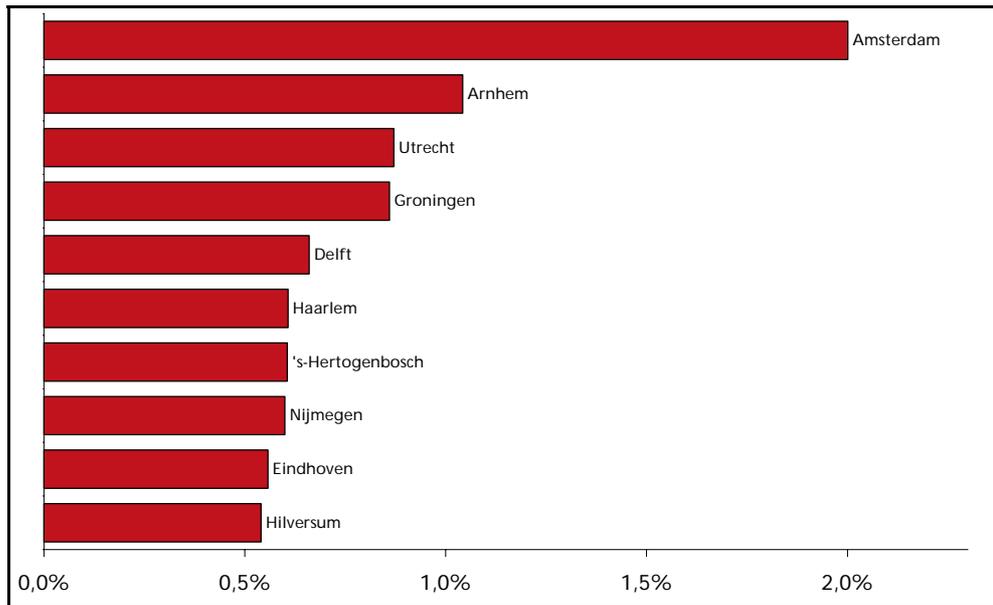
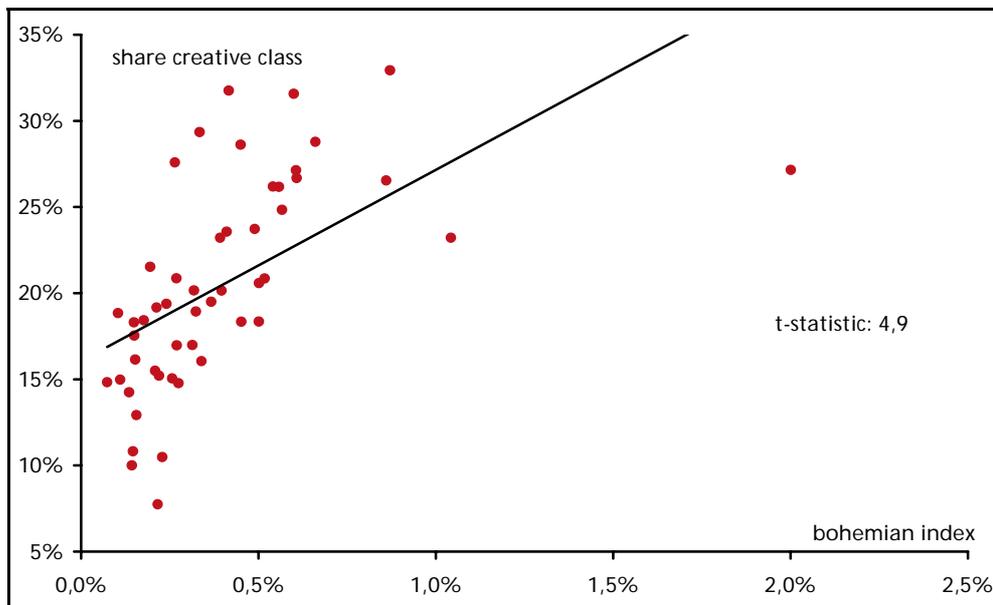


Figure 5 shows the correlation of this Dutch bohemian index with share of creative class in the fifty largest Dutch cities. These findings, positive correlations between both the Dutch bohemian index and gay index on the one hand and share of creative class on the other, are similar to the correlations Florida finds for the USA.²⁷

Figure 5 Bohemian index correlates with share of creative class



²⁷ Florida, 2005: *Cities*, p. 87-109.

Florida's third and last measure for local tolerance is diversity. This diversity is measured by the so-called melting-pot index: the relative percentage of foreign-born people in the city.²⁸

As our own third indicator for tolerance we have used *ethnic diversity*. This indicator differs from Florida's Melting Pot Index because we took account of differences in ethnical background among the foreign-born people in a town. Our measure for ethnical diversity is based on the idea that the importance of diversity will increase with the chances for every urban inhabitant to get in contact with people of a different ethnical background.

Diversity is highest in a town where every inhabitant has a different ethnical background, which is of course a theoretical case. The larger the variety of ethnical backgrounds of a given town's population, the greater will be its diversity in our sense. We have calculated ethnical diversity using the Hirschman-Herfindahl index, which is the sum of squared shares of the various ethnical backgrounds among total population.

Figure 6 Top 10 Ethnically diverse Dutch cities (Hirschman-Herfindahl index)

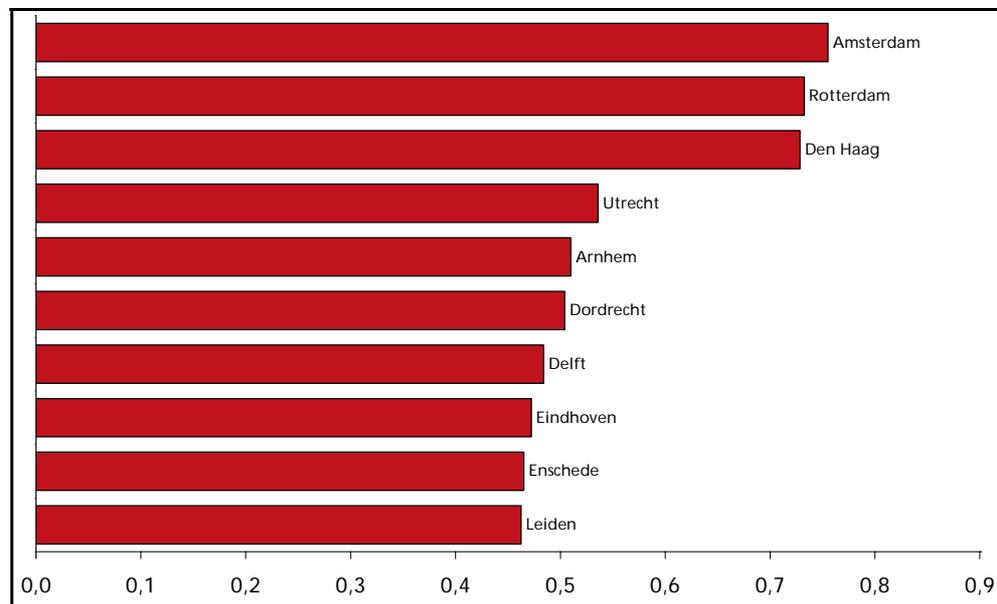


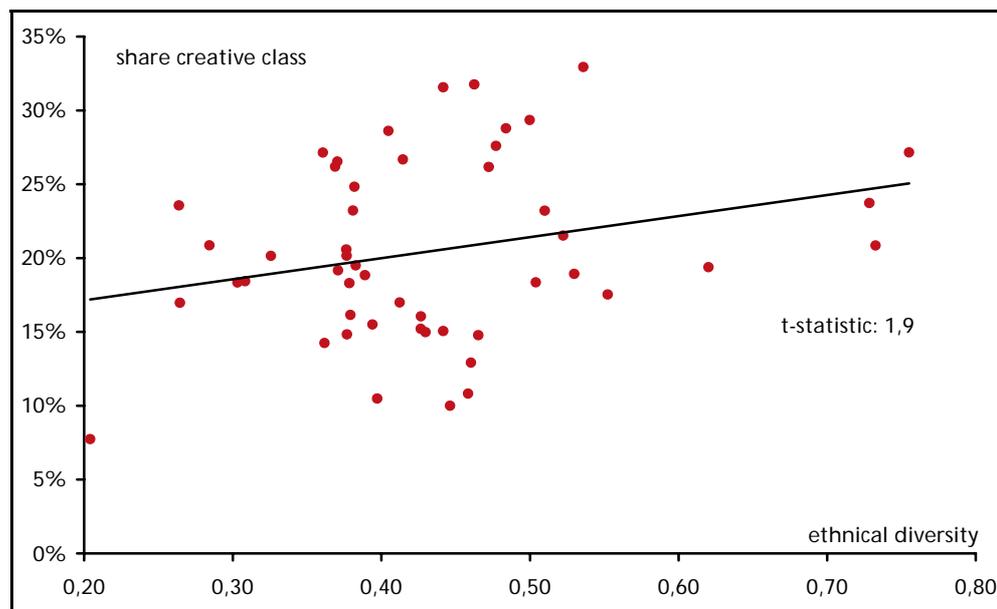
Figure 6 ranks the top 10 cities that are ethnically most diverse, showing that the three largest cities of the Netherlands, Amsterdam, Rotterdam and The Hague, are ranked first, second and third in exactly the same order.

²⁸ Florida, 2002: *The Rise of the Creative Class*, pp. 249-265 and 332-334.

Figure 7 shows the correlation between ethnic diversity and share of the creative class in Dutch cities. In contrast to our other two diversity measures, our measure for ethnic diversity is not very significantly correlated to share of the creative class. Florida, too, finds no correlation between his Melting Pot Index and the creative class in US cities.²⁹

Ethnic diversity might be an indicator not only for tolerance, but also for all sorts of social problems related to immigrants. Therefore we have put several crime indicators as control variables into our models. None of these crime variables did explain share and growth of the creative class significantly; that is why they do not show up in the reduced models presented in the next section.

Figure 7 Correlation between diversity and share of creative class in Dutch cities



The indicators for tolerance introduced so far reflect tolerance and openness towards cultural and ethnic diversity. There is yet another type of tolerance and openness in cities referred to by Florida – tolerance and openness towards a diverse night life. The creative class as Florida sees it combines hard working with intensive social life: work hard and play hard.³⁰ The creative class has flexible working schedules, often working until late at night. After work, creative people want to relax in the city's

²⁹ Florida, *Rise*, p. 255.

³⁰ Florida referring to: E. Coslor, 2001: *Work hard, play hard: the role of nightlife in creating dynamic cities* (unpublished)

venues never minding the time of day or night. That is why, according to Florida, successful cities offer daily ‘around the clock’ entertainment. And that again is why local governments should be tolerant towards nightlife venues in town.

To account for this type of tolerance we introduced our fourth and last tolerance-indicator: local *pub closing hours*. Such an indicator, which is expected to be closely related to urban amenities as well, is not used by Florida.

In the Netherlands, local government is responsible for legislation on the closing hours of pubs, clubs and restaurants. There are huge differences between cities on this point. In some cities pubs should be closed by 1 a.m., while other cities have no restrictions at all and many pubs are open all night during weekends. We suggest this local policy is a good indicator for local tolerance towards night life.

By viewing local websites or calling the town halls we got a complete picture of the closing hours in Dutch cities. Ten out of the fifty largest municipalities in The Netherlands have no limitations in opening hours for bars and restaurants. Among them are the four biggest cities and the cities of Dordrecht, Groningen, Maastricht and Venlo. However, there is no significant correlation between pub closing hours in cities and share of the creative class (t-value = 1.1).

Aesthetics

To indicate the aesthetic qualities of Dutch cities we used two indicators, one for urban aesthetics and one for natural beauty.

Dutch **environmental beauty** is indicated by the proximity to nature. This is measured as a weighted sum of the natural areas surrounding the city, the weight depending on the travel time from the city to that area, being a monotonically decreasing function.

Figure 8 Top 10 Dutch cities with nearby scenic areas (proximity to nature)

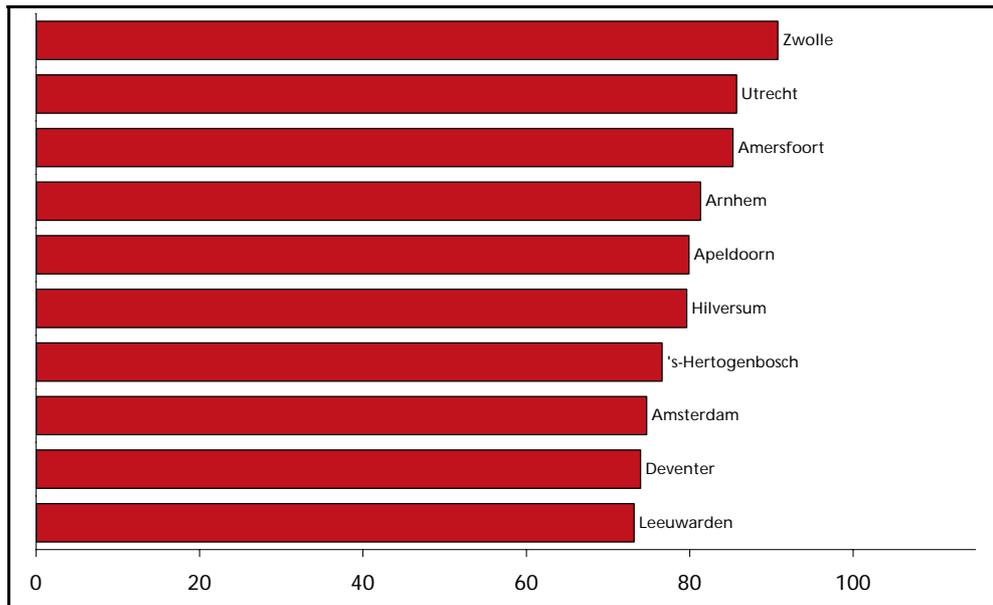
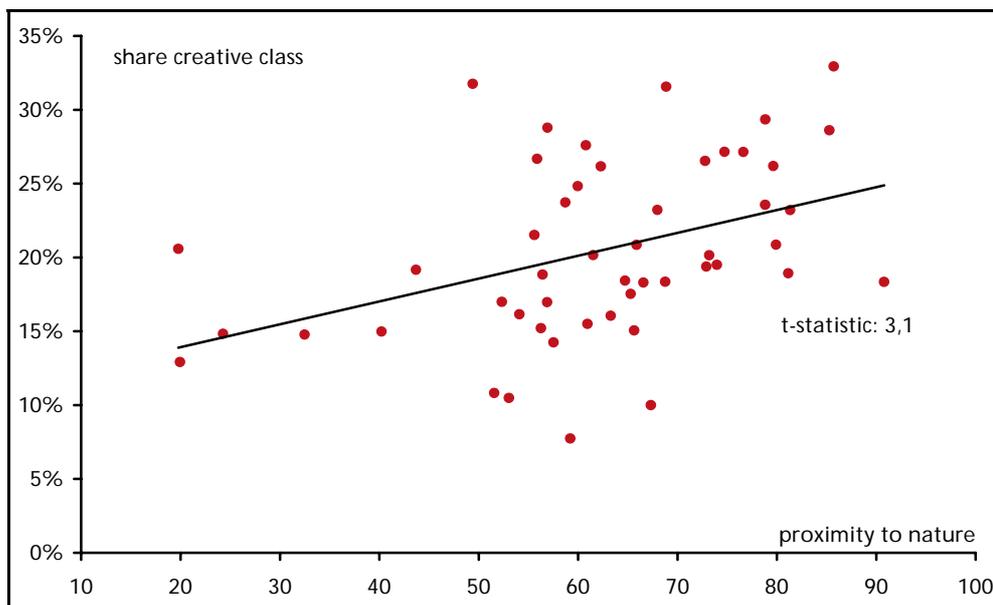


Figure 8 shows the ranking of Dutch cities which provide most nearby nature. Most of the cities ranked in this top 10 are located in the middle (Utrecht, Amersfoort, Hilversum) and eastern (Zwolle, Arnhem, Apeldoorn) parts of the country with relatively large natural sites like the Veluwe and the Utrechtse Heuvelrug. Simple correlations in figure 9 suggest that these cities with most nearby nature also have a larger share of people belonging to the creative class.

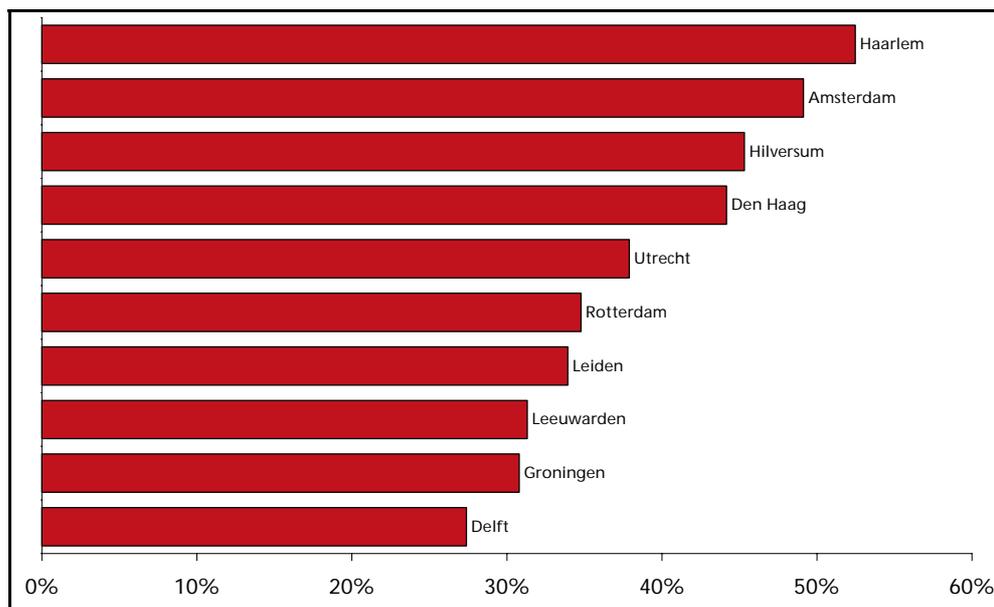
Figure 9 Proximity to nature correlates with share of creative class in Dutch cities



The share of houses built before 1945 (pre-second world war) as a percentage of total housing stock have been taken as indicators of a city's historical character. This amount of historic buildings indicates the **urban aesthetics** and authenticity Florida refers to. Others also emphasize the importance of historic buildings for the identity of young urban professionals.³¹

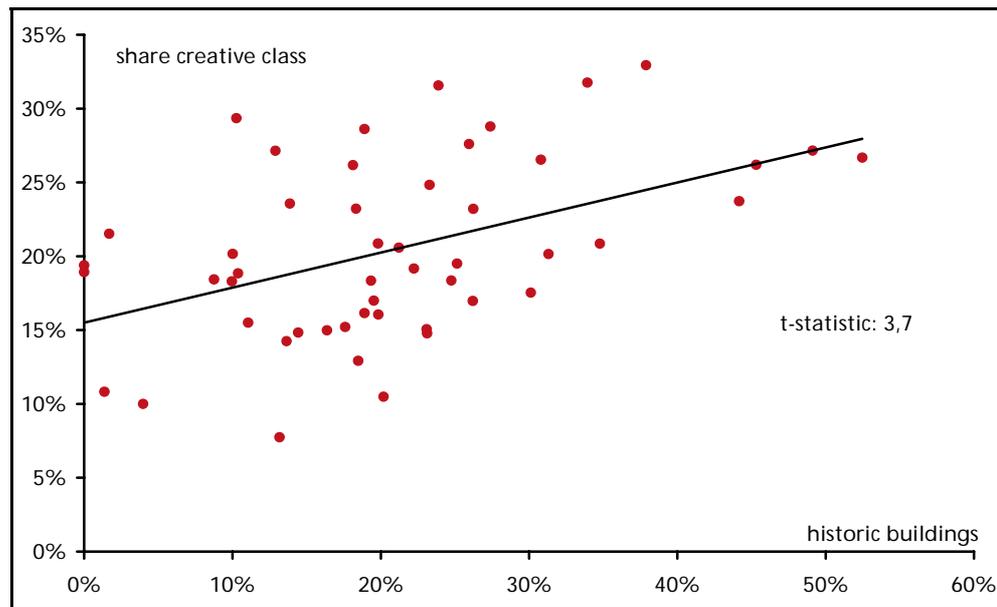
Haarlem, Amsterdam and Hilversum are ranked first, second and third historic cities (see figure 10). Rotterdam is still in the top-10, but last of the four largest cities due to bombings in the Second World War that destroyed large parts of the inner city. Figure 11 shows a positive correlation between share of historic buildings and share of creative class.

Figure 10 Top 10 Historical Dutch cities (pre-1945 buildings as share of total housing stock)



³¹ H. Häußermann, W. Siebel, 1996: *Soziologie des Wohnens* (Weinheim, Juventa).

Figure 11 Historicity of Dutch cities correlates with share of creative class



In this paper we aim to find an answer to the question what is attracting creative people in the Netherlands to a particular town: a tolerant, open and diverse urban atmosphere and aesthetical beauty, – or the physical presence of local amenities and job opportunity. Therefore, in addition to our indicators for tolerance and aesthetics, in our models we also use indicators of local amenities and job opportunities.

Amenities

Where Florida finds tolerance and aesthetics decisive for the behavior of his creative class, American urban economics has for several decades emphasized the importance of amenities for explaining migration patterns, especially of people with high levels of education and high incomes. When incomes are rising and the location of firms no longer depends on natural resources, location specific amenities gain importance and migration “flows to more desirable locations”.³²

In the USA, these location specific amenities have varied from mainly climate and environmental beauty from the 1950s on³³ to opera houses, sport events, pubs and restaurants in the 1980s and 1990s.³⁴ Florida does not find significant correlations

³² T. A. Knapp, P. E. Graves, 1989: ‘On the role of amenities in models of migration and regional development’, in: *Journal of Regional Science*, 29, 1, pp. 71-87.

³³ E. L. Ullman, 1954: ‘Amenities as a factor in regional growth’, in: *Geographical Review*, 44, pp. 119-132.

³⁴ T. N. Clark, 2003: ‘Urban amenities: lakes, opera, and juice bars do they drive development?’, in: *The city as an entertainment Machine*, Research in Urban Policy, 9, pp. 103-140.

between cultural amenities and share of creative class.³⁵ But others, like Edward Glaeser, do find positive correlations with households' choice of location.³⁶

Similar to Glaeser, we have used the amount of *live performances* per thousand inhabitants as our indicator for cultural amenities. Live performances include classical concerts, opera, dance and theater performances and popular music. The number of performances is determined using data from the Dutch *Uitburo* (NUB) which provides a ticket service and maintains a calendar that is used to advertise the programmed performances.

In addition to our indicator for cultural amenities we used the *number of pubs* as a second indicator for urban amenities. This urban amenity is measured as the number of pubs per thousand inhabitants. The figures for the number of pubs per city are obtained from the *Bedrijfschap Horeca en Catering* (Trade organization for hotel and catering industry).

Both theaters and pubs seem at first sight to have a problem with respect to endogeneity; they are in theory not only attracting people, but also a result of the local spending of those people. But culture is in The Netherlands largely a subsidized industry, which means that national policy to a large extent decides the regional distribution of cultural supply. We have therefore assumed culture to be exogenous to our model. For pubs the problem is more serious. Although the location of pubs and restaurants also has an important local public policy aspect and exogenous local and regional traditions play their parts as well, it is of course necessary for such venues to have local demand, and this is supposed to correlate with the presence of highly-educated creative people. This problem could have been resolved by instrumenting this indicator; but since no useful instrumental variables were available we had to leave this problem unresolved.

Job opportunities

Although amenities are generally thought to have an increasing influence on living patterns of people, job opportunities still remain important. We suggest that in measuring these job opportunities it is important to take account not only of jobs

³⁵ Florida, *Cities*, p. 102

³⁶ Glaeser, *Consumer City*.

within the city, but of the proximity to jobs elsewhere as well, especially in the Netherlands where none of the four biggest cities is further than 70 km from one of the others.

Therefore we included the proximity to concentrations of jobs in our models. We expect that members of the creative class prefer to live where a wide variety of jobs is available. We not only included the proximity to jobs as an agglomeration force, but also the impact of road congestion on the accessibility of jobs as a disadvantage of agglomeration.³⁷

Our measure for proximity is based on travel times rather than distances between locations, which are often used in other studies. Commuting times are corrected for the real effect of road congestion. Proximity is calculated as the total sum of jobs that can be reached from the city, on the assumption that there is a willingness to spend time on travel to work which is monotonically decreasing with time.³⁸

Control variables

To explain the living patterns of the Dutch creative class we have used – in addition to the four categories of indicators discussed above: for tolerance, aesthetics, amenities and jobs – several control variables.

Firstly, we included **share of owner-occupied houses**.³⁹ The housing supply in Dutch cities is largely determined by public policy, with large parts consisting of social housing not available for people with higher incomes. We expect this policy-driven housing supply to be important in explaining the composition of a city's population. In our model explaining the share of creative class among local population we included the **share of students** living in town as another control variable.⁴⁰ Students during their studies do not belong to the labor force and so cannot belong to the creative class. But after studies most students will be members of the creative class.

³⁷ See for an overview of agglomeration forces and new economic geography: S. Brakman, H. Garretsen & C. van Marrewijk, *An Introduction to Geographical Economics* (Cambridge University Press 2001).

³⁸ Proximity to jobs is calculated with the following formula:

$$\tilde{J}_i = \sum_j w(0.5 \times t_{ij}^{morning} + 0.5 \times t_{ji}^{evening}) \times J_j ; \text{ in this formula } t_{ij} \text{ is the travel time from city } i \text{ to } j,$$

$w(t)$ is the share of employees that will accept t as the time needed to get to work and J_j is the amount of jobs in city j .

³⁹ Source: Ministerie van VROM (Dutch Ministry of Spatial Planning, Housing and The Environment).

⁴⁰ Source: Informatie Beheer Groep (The *Informatie Beheer Groep* is responsible for the execution of several acts and regulations, such as student grants and information management).

Some of them will stay in the town of their studies, which implies that university towns will automatically have higher numbers of creative people in their working force.

In our growth model we have disregarded these students and replaced them by **house prices** per square meter.⁴¹ We expect that high house prices will from a certain point onward prevent popular cities from growing further.⁴²

To compensate for possible omissions of any regional variables which might influence share and growth of a city's creative class, we included a *spatial lag variable* in our models. The spatially lagged variable is the weighted average of the share and growth of the creative class in all (not just the cities in our sample) surrounding municipalities.⁴³ This spatial lag variable turned out to be insignificant in all our models. We concluded that there is no evidence for omitted regional variables in our models.

4 EXPLAINING LIVING PATTERNS OF THE DUTCH CREATIVE CLASS

In the previous chapter we introduced the indicators for tolerance, aesthetics, urban amenities, job opportunities as well as the control variables which we are going to use in our models. Table 2 summarizes these indicators. For most of the tolerance and aesthetics indicators we found simple positive correlations with the share of the creative class in Dutch cities.

Of course this does not mean that these factors are the real cause why these cities are attracting the creative class. Other factors, like job opportunities or amenities, may in fact make the difference. In this section we will therefore combine the indicators mentioned in table 2 in a single model, examining the relationship between these indicators on the one hand and, on the other, share and growth of the creative class. We will do this in cross section models with a sample of the Dutch core cities.

⁴¹ Source: Marlet, Van Woerkens, 2005: *Atlas voor gemeenten*.

⁴² T. A. Knapp, P. E. Graves, 1989: 'On the role of amenities in models of migration and regional development', in: *Journal of Regional Science*, 29, 1, pp.71-89.

⁴³ The weight depending on the real travel time to those regions, and the size of the regions. See also: L. Anselin, *Spatial Econometrics* (1988).

Table 2 Measuring tolerance, aesthetics, amenities and job opportunities in Dutch cities

Category/hypothesis	Indicator
1 Tolerance	<i>Bohemian index</i> : share of artists in the city
	<i>Gay scene</i> : share of gays among total population
	Ethnic diversity
	Pub closing hours
2 Aesthetics	<u>Environmental beauty</u>
	Proximity to nature
	<u>Historic character</u>
3 Urban amenities	Share of historic buildings
	Amount of live performances per 1,000 inhabitants
4 Job opportunities	Amount of pubs per 1,000 inhabitants
	Proximity to jobs
5 Control variables	Traffic congestion affecting accessibility of jobs
	Amount of students
	Housing prices
	Share of privately owned houses
	Crime rates

We are taking cities, not regions, as our unit of analysis because we suggest that the creative class prefers to live in cities (see table 1). We are mainly interested in the differences between cities, not between cities and suburbs. The main question is why some cities are successful in attracting or keeping members of the creative class while others are not.

We have only data for the fifty largest Dutch municipalities. The problem with this sample of fifty municipalities is, however, that there is no rationale other than the availability of these data in selecting them. That is why we prefer to use a sample of thirty-one so-called core cities for our cross-section analyses. The selection of this sample of cities is based on their regional function and selected by real travel-to-work patterns.⁴⁴ In using this sample of core cities we prevent the risk of comparing a core city like Amsterdam with one of its own suburbs, like Amstelveen or Haarlemmermeer, which are also in the sample of the fifty largest municipalities. We

⁴⁴ Done by: F. G. van Oort, *Agglomeration, Economic Growth and Innovation. Spatial analysis of growth- and R&D externalities in the Netherlands* (2002).

are aware of the fact that by doing so we use a rather small sample for our analyses. But then we can't help that the country we are dealing with is small and does not have very many cities to compare.

Because of the small sample we did pay much attention to reliability checks of our estimation results. In the tables below we only present the models that provide the best explanations. But we tried a large amount of alternative models, including and excluding indicators in different combinations (always, of course, within the boundaries of theoretically acceptable specifications). We also tried different years of observation. Finally, we actually tried the same analyses with our sample of fifty municipalities. The estimating results of these alternative models show that our main findings can remain unchanged. This gave us confidence in the robustness of our results.

With the indicators presented above and with our sample of Dutch core cities we estimated models with four categories of variables designed to explain share and growth of the creative class in Dutch cities: tolerance, aesthetics, amenities and job opportunities. The results of our model estimations are shown in table 3 (share of creative class) and table 4 (growth).

In the tables the results are shown of five models. Every first, second, third and fourth column presents the results of models that comprise all indicators for aesthetics, amenities and job opportunities, adding the different tolerance indicators one by one in the four different models. Finally, we present the results of the reduced models with the best fit in column V of both tables.

Table 3 Explaining the share of the creative class in Dutch cities (2004)

	I	II	III	IV	V
1. Tolerance					
Bohemian index	-5.5 (-0.7)				
Gay scene		5.3 (0.8)			
Ethnical diversity			-0.002 (-0.0)		
Pub closing hours				-0.0016 (-0.6)	
2. Aesthetics					
Proximity to nature	0.73 (2.6)***	0.56 (1.9)*	0.65 (2.1)**	0.70 (3.1)***	0.65 (2.6)***
Share historic buildings	0.15 (3.4)***	0.13 (2.9)***	0.15 (3.3)***	0.16 (3.2)***	0.15 (3.4)***
3. Urban amenities					
Live performances per 1000 inhabitants	10.7 (2.7)***	8.6 (2.2)**	9.9 (2.8)***	9.3 (2.6)***	9.9 (2.8)***
Pubs per 1000 inhabitants	0.036 (1.9)*	0.031 (1.8)*	0.033 (2.0)*	0.040 (2.5)***	0.033 (2.0)*
4. Job opportunities					
Proximity to jobs	0.15 (4.5)***	0.14 (4.5)***	0.14 (4.6)***	0.14 (4.3)***	0.14 (4.6)***
Traffic congestion influencing accessibility of jobs	-0.12 (-2.1)**	-0.10 (-1.9)*	-0.11 (-2.1)**	-0.10 (-1.9)*	-0.11 (-2.1)**
5. Control variables					
Amount of students	1.22 (6.7)***	1.19 (6.8)***	1.22 (4.7)***	1.24 (6.6)***	1.22 (6.8)***
Owner-occupied houses	0.22 (6.1)***	0.22 (5.9)***	0.22 (3.0)***	0.21 (5.2)***	0.22 (6.2)***
	OLS	OLS	OLS	OLS	OLS
N	31	31	31	31	31
Moran's I	>31%	>35%	>29%	>34%	>27%
R ² adj.	0.82	0.82	0.82	0.82	0.83

Notation: coefficient (t-value) ***

* significant at a 90% level

** significant at a 95% level

*** significant at a 99% level

Table 4 Explaining the growth of the creative class in Dutch cities (1994-2004)

	I	II	III	IV	V
1. Tolerance					
Bohemian index	-31.8 (-2.0)*				
Gay scene		-1.3 (-0.1)			
Ethnical diversity			-0.023 (-0.3)		
Pub closing hours				0.0034 (0.8)	
2. Aesthetics					
Proximity to nature	1.60 (5.0)***	1.25 (3.3)***	1.21 (3.5)***	1.15 (3.1)***	1.23 (3.8)***
Share historic buildings	0.044 (0.4)	0.070 (0.7)	0.065 (0.7)	0.043 (0.4)	0.069 (0.7)
3. Urban amenities					
Live performances per 1000 inhabitants	16.2 (2.5)***	13.6 (2.0)*	12.9 (1.9)*	14.5 (2.2)**	13.3 (2.1)**
Pubs per 1000 inhabitants	0.055 (2.2)**	0.061 (2.1)**	0.061 (2.2)**	0.048 (1.4)	0.061 (2.2)**
4. Job opportunities					
Proximity to jobs	0.30 (1.3)	0.54 (2.2)**	0.55 (2.8)***	0.57 (2.8)***	0.55 (2.8)***
5. Control variables					
House prices per square meter	-0.070 (-1.4)	-0.131 (-2.9)***	-0.129 (-3.4)***	-0.133 (-3.4)***	-0.133 (-3.6)***
Privately owned houses	0.13 (1.1)	0.25 (2.5)***	0.23 (2.3)**	0.26 (2.8)***	0.25 (2.8)***
	OLS	OLS	OLS	OLS	OLS
Moran's I	>58%	>57%	>55%	>72%	>57%
N	31	31	31	31	31
R ² adj.	0.39	0.31	0.31	0.32	0.34

Notation: coefficient (t-value) ***

* significant at a 90% level

** significant at a 95% level

*** significant at a 99% level

Conclusions seem to be clear. As appears from our findings, living patterns of the Dutch creative class are not explained by differences in tolerance and openness between the cities in the Netherlands. But aesthetical qualities, historical buildings within and environmental beauty outside cities clearly play an important role.

Meanwhile the most important explanation is still to be found in the traditional factors: job opportunities and – less traditional – urban amenities. Our indicator ‘proximity to jobs’ and both our urban amenities largely explain share as well as growth differences of the creative class between Dutch cities.

One of our two aesthetic indicators, ‘proximity to nature’, also explains both share and growth of the creative class. The other one, share of historic buildings, only explains the share of the creative class in Dutch cities, not its growth between 1994 and 2004.

As said, the results show that none of the tolerance indicators has a significantly positive correlation to either share or growth of the creative class in Dutch cities. We did find simple positive correlations between these indicators and share of the creative class (figure 5, 7 and 9), but these positive signs disappear when we enlarge our models to include indicators for aesthetic features, amenities, job opportunities and control variables (table 3).

Therefore, in contrast to Florida’s findings for the United States, we may conclude that tolerance, measured in four different ways, is not explaining the residential patterns of the Dutch creative class at all. The creative class does not tend to live nor to grow in Dutch cities with more ethnical diversity of population or with a larger gay scene. Nor do they appear to be attracted by cities whose pubs are open all night.

Conclusions about the importance of artists in a town are less clear. In our growth model, bohemians do show a significant but, unexpectedly, negative sign suggesting that the creative class tend to grow less in towns where many artists live (column I in table 4).

It is, however, a single city which is responsible for this negative sign: the city of Arnhem in the east of the Netherlands, which has a large community of artists but not many (other) members of the creative class, and low levels of growth. The city of Arnhem has one thing instead: a fairly large academy of arts. Leaving Arnhem out of the sample means that the bohemian index does not significantly explain the growth

of the creative class at all. Instead, our findings suggest that urban cultural venues, or to be precise: live performances, are the most important urban amenity attracting the creative class.

This probably provides an answer to the question whether the mere presence of artists in town constitutes a reason for the creative class to live there or, rather, their creative productions as enjoyed in museums and live performances in theatres.

Jane Jacobs recognized two major reasons why culture is important to the local economy.⁴⁵ First, the cultural sector is a cauldron of creativity because it generates creative, innovative ideas benefiting other sectors in the local economy as well. Second, cultural events are a meeting place for people who exchange ideas and accordingly foster local levels of knowledge, innovation and growth.

Which of these mechanisms is at work in the Netherlands? Is it the cultural sector itself that generates creative ideas, which in turn benefit local economies? Or is the cultural sector rather a producer of culture, which attracts highly educated, creative people who in their turn create ideas, are highly productive and thus stimulate economic growth? Local policy makers in the Netherlands base their policy mainly on the first assumption. We, on the basis of our findings both in this and in our previous paper on the creative class⁴⁶, suggest the latter is true.

In our previous paper we found no evidence for a connection between artists and city growth, and according to the results presented in this paper it is not artists but live performances, i.e. one of our amenity indicators, which have strong explanatory force for both share and growth of the creative class.

In our reduced share-model the coefficient of the amount of live performances is 9.9 (column V in table 3). This means that when the yearly supply of theatre performances in town A is one per thousand inhabitants (0.001) larger than in town B, the share of creative class in the total population is expected to be about one percent larger ($9.9 \times 0.001 = 0.01$). For a city with 250,000 inhabitants, like Utrecht, fourth largest city in the country, this 1% difference in the share of creative class means a difference of one theatre with an average of 250 performances (one per thousand inhabitants) per year.

⁴⁵ J. Jacobs, 1984: *Cities and the Wealth of Nations* (New York, Random House).

⁴⁶ Marlet, 2004: *Skills and creativity*.

Even Florida, who introduced the bohemian index in his earlier work as a measure for tolerance and openness to diversity, in his later work considers bohemians as “a considerable improvement over traditional measures of amenities in that it provides a direct measure of the producers of those amenities” as well.⁴⁷ But as we have shown, in our models for the Netherlands it is not the presence of the producers of culture but cultural measures themselves which provide a strong explanation of the residential patterns of the Dutch creative class.

As another indicator for urban amenities beside live performances, the reduced models also show a positive correlation between the number of pubs in a town and the share and growth of its creative class (columns V in table 3 and 4).⁴⁸ But as we noted above, if anywhere we face uncertainties here about the direction of the causality: the number of pubs might be the result rather than cause of the presence of a large creative class.

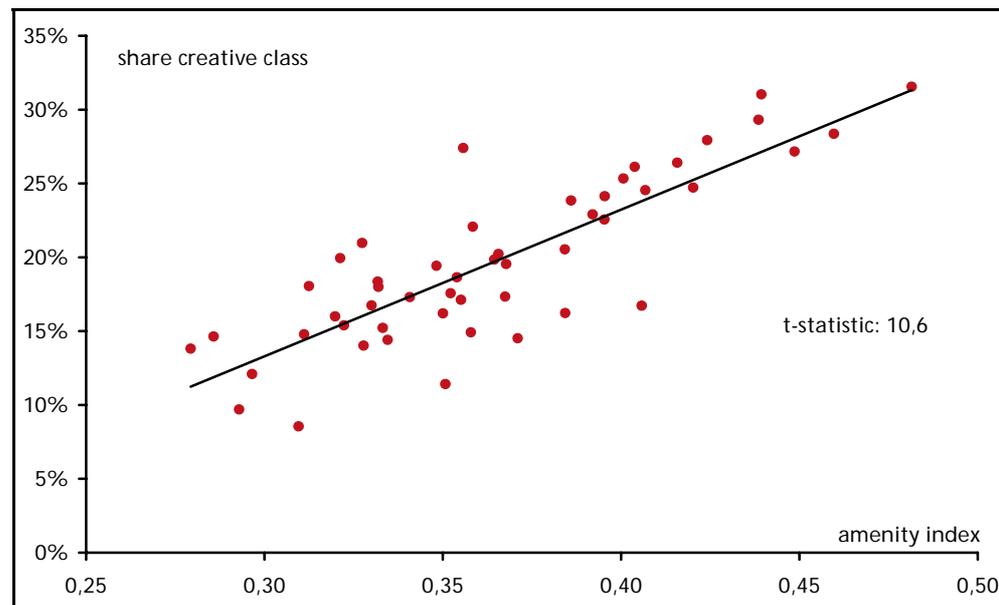
That is why we are currently conducting a survey among graduates of Utrecht University, asking them where they went to live after studies and why. The results of this survey, to be published soon, will give more certainty about the direction of the causal relationships found in this paper.

This causality problem is absent from the set of highly significant aesthetic indicators: share of historic buildings and proximity to nature. These indicators are without any doubt exogenous to the model, which means we can conclude that the creative class tends to live in Dutch towns with historic character and nearby environmental beauty. Combining these findings with those for our amenity indicators and job opportunities we get a clear picture of the type of city most popular among the Dutch creative class. These cities are most likely to be cities combining a historical inner city with many pubs and cultural venues and located in a natural environment, but still facing large concentrations of jobs nearby.

⁴⁷ Florida, 2005: *Cities*, p. 134.

⁴⁸ Beside live performances and pubs we also tried restaurants, museums and crime rates as urban (dis-) amenities in our models. But these amenities did not significantly explain either share or growth of the creative class and are, for that reason, excluded from the final model specifications.

Figure 12 Local amenities and aesthetics explain share of creative class in Dutch cities



Not tolerance, but aesthetic features, amenities and job opportunities provide a strong explanation for both share and growth of the creative class in Dutch cities. A combination of aesthetic factors and amenities significantly explaining the living patterns of the Dutch creative class makes it possible to create an ‘amenity index’ for the Dutch creative class. Figure 12 shows this index in relation to the share of people belonging to the creative class. This graphic illustrates the strong explanation we found for the regional spreading of the creative class in the Netherlands.

Nevertheless, in the most ‘aesthetical’ and amenity-rich city of the Netherlands, Amsterdam, the creative class is no longer growing (see figure 2). Our suspicion is that this has something to do with building restrictions, shortage of privately owned houses and the comparatively high house prices resulting from this.

Although beyond the scope of this paper, we will discuss two of our control variables here, one of them being house prices. In the reduced growth model (column V in table 4) high house prices constitute a strong negative explanation for the growth of the creative class.⁴⁹ This suggests that it is indeed the lack of available and affordable

⁴⁹ In one of the growth models, rents do not significantly correlate with the growth of the creative class (column I in table 4), but the bohemian index is significant with the wrong sign here. Bohemians and rents do correlate positively (correlation coefficient = 0.3), which might mean that in the extended models the expected negative sign of house prices is absorbed by the bohemian index.

houses in popular and amenity-rich cities which is causing a reverse migration from those towns. Members of the creative class who do like to live in cities like Amsterdam are no longer able to buy or rent a home there, which make them look for alternative places. High rents are here, to put it in terms of agglomeration theory, a strong congestion force.⁵⁰

We suspect that the relative stagnation of the (large) share of the creative class in Amsterdam is entirely due to extremely high rents since the end of the 1990s. The coefficient of house prices is -0.13 (column V in table 4). House prices are measured in € 1000 per square meter. In Amsterdam house prices were about € 2000 per square meter in 2004, which is approximately twice the prices of 1994. If Amsterdam had built more new houses and reduced price rises with 20%, house prices would have been € 1800 per square meter, i.e. € 200 (10%) below the present value. In this theoretical case the expected increase in share of the creative class would have been 2.6% of total population ($0.13 \cdot 0.2 = 0.026$). In that case Amsterdam would not have been in sixth position in our ranking of creative cities (see map 1), but in fourth.

An important explanatory control variable in our share-models was the share of students in the population. The conclusion seemed trivial: where students live while studying, there they stay after studies. University cities would thus seem to benefit for evermore. But this is not entirely true.

For one thing, not every student in the Netherlands lives in the city where his school is located. In Holland it is easy to travel between the major cities, which means a student can easily live in Amsterdam (the biggest city) while studying in Rotterdam (the second biggest). Work-in-progress on the location behavior of students in the Netherlands suggests that the amount of students in a town depends – of course – highly on the presence of a university. But this is not all. The availability of affordable houses and, again, amenities like culture and historic buildings explain where students tend to live.

Second, many students tend to leave their towns after studies. The amount of students did correlate in our models with creative class. But other factors were also important. This means (1) people without a university degree may belong to the creative class, and (2) people with a university degree may after studies belong to another town's

⁵⁰ E. Helpman, 1998: 'The size of regions', in: D. Pines, E. Sadka, I. Zilcha (eds.), *Topics in Public Economics* (Cambridge University Press).

creative class. Especially Enschede, Maastricht, Groningen and also Rotterdam find it hard to keep their student populations after studies. Reasons for students to leave these towns are primarily the nearness of jobs, but also changed living preferences. Some people prefer to live in small towns in the countryside, others in cities with more amenities.

This is confirmed by our model estimations. University towns on average have larger creative classes, university towns in agglomerated regions and with high amenity values even more so. The coefficient of the amount of students explaining share of creative class is about 1.2 (column V in table 3). But we have taken students as a percentage of the total population, and creative class as a share of the total labor force. The labor force is approximately 60% of the total population, which means that the coefficient would have been around 0.7 if we took both indicators out of total population. This means that 1,000 extra students in town will, after a while, yield an extra 700 ‘creatives’.

In a previous paper we concluded that universities do not foster growth directly, but through larger stocks of human capital.⁵¹ We therefore support Richard Florida’s view of the economic importance of universities, “Policy makers have overstated the degree to which universities can drive national and regional economics ... universities are far more important as the nation’s primary source of knowledge creation and talent”.⁵²

6. CONCLUDING REMARKS

Richard Florida states that is not (only) job opportunities or urban amenities which attracts creative highly-educated people to cities but, rather, tolerance and aesthetics: “Talent is not necessarily drawn to warmer climates, greater recreational amenities, or cultural amenities”, but: “chief among the attractions to workers is diversity and a generalized acceptance of diversity among the local population”.⁵³

⁵¹ Marlet, 2004: *Skills and creativity*.

⁵² Florida, 2005: *Cities*, pp. 143-144.

⁵³ Florida, 2005: *Cities*, p. 101, 129.

In this paper we have made clear that the tolerance/creative class nexus empirically fails to materialize for the Netherlands. We have not found any significant positive correlations from our tolerance indicators – the Dutch bohemian index, ethnic diversity, gay scene or pub closing hours – to share and growth of the creative class.

However, the aesthetic qualities of cities (historic buildings) and their location (natural environment) do provide a strong explanation for share and growth of the creative class in Dutch cities. Beside that, job opportunities and urban amenities are still the most important factors that influence the choice for a place of residence. These results are summarized in Table 5.

Table 5 Summery of results

	Share creative class	Growth creative class
1. Tolerance	0	0
Bohemian index	0	0
Gay scene	0	0
Ethnical diversity	0	0
Pub closing hours	0	0
2. Aesthetics	+	+/0
Proximity to nature	+	+
Share historic buildings	+	0
3. Urban amenities	+	+
Live performances per 1,000 inhabitants	+	+
Pubs per 1,000 inhabitants	+	+
4. Job opportunities	+	+
Proximity to jobs	+	+
traffic congestion influencing accessibility of jobs	-	0

Our major finding was that it is not tolerance or openness to cultural or ethnical diversity that makes cities attractive to the creative class, but – beside job opportunities – aesthetic features like nature and historic buildings, and traditional amenities like culture, and cafés. Or in a word: quality-of-place.

Our conclusion that tolerance is not important in the competition between Dutch cities of course depends on the empirical findings within our sample of Dutch core cities and the indicators for tolerance we chose: bohemians, gays, ethnical diversity, pub closing hours.

This does not inevitably mean that tolerance and openness are in fact unimportant to creative, highly-educated people in the Netherlands. It may mean that we have been using the wrong measures for tolerance in Dutch cities. It may also mean that Dutch cities do not differ as much as American cities do in the way of tolerance characteristics. Tolerance might well be important while not being a factor in people's choice of residence: for lack of obviously intolerant cities, people who do find tolerance important may not be either repelled or attracted by any particular city on that score.

These two reservations lead to two further lines of possible research on the supposed tolerance/growth nexus. First, measures for tolerance and openness within cities could be improved. Secondly, because the supposed lack of cultural differences between cities in small countries like the Netherlands, and therefore the absence of large differences in tolerance characteristics, we should enlarge our sample of research into a sample of European cities or metropolitan areas.

For if tolerance is, in spite of our findings in the Netherlands, an important living preference for creative and highly-educated people, it should be possible to measure this in differences in attraction between the larger cities of various European countries like London, Paris, Milan, Berlin, Barcelona and Amsterdam, rather than between cities within a small country like the Netherlands.