MARTIN
Prosperity *Institute*

Culture City

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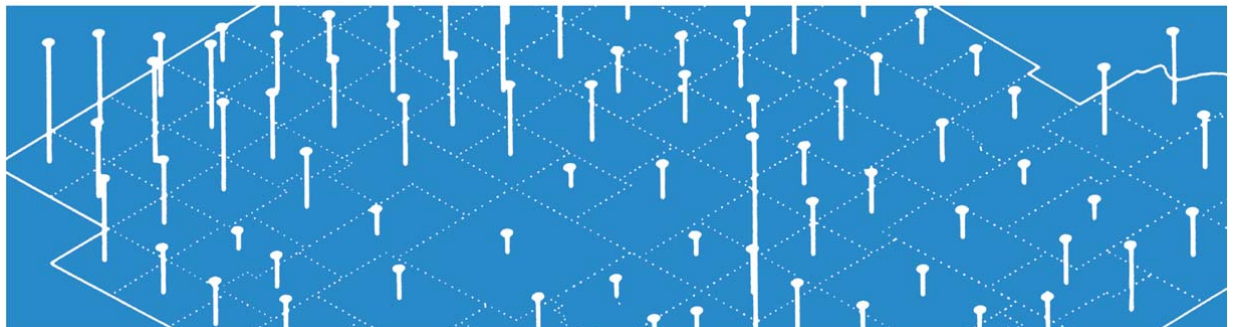
Abstract

Culture and creativity have been seen as catalysts for social change, urban diversity and revitalization of neighborhoods by thinkers such as Richard Florida and Charles Landry. The creative and cultural sectors are also viewed as essential parts of urban economies both as factors attracting population and as a dynamic part of the economy with strong growth. This means that these sectors stimulate economic growth in cities in several ways. From stylized statistics we know that occupation in the creative and cultural sectors is spatially concentrated in large metropolitan regions. This observation, and other theoretical arguments, stress that the performance and growth of these sectors should be assumed to be dependent on agglomeration economies. In this analysis we examine the relationship between spatial distribution and growth of occupation in a sample of people working in the creative and cultural sectors in relation to growth in cities in Sweden. One interesting finding from the empirical analysis is that, when we analyse differences between the core and peripheral parts of functional regions, we find that there are no real signs of significant differences between them. In particular, we find that in the peripheral municipalities (suburbs) that surround the core municipalities the occupation in the creative and cultural sectors is more correlated to population growth in these municipalities than proximity to creative and cultural occupation in the core parts of the functional regions. From a policy perspective, this means that investments in culture not only matter for the biggest cities and city centres, but also for medium and smaller sized regions as well as suburbs.

1. INTRODUCTION

Spatial distribution of economic and population growth can in many ways be explained by agglomeration economies that spring from economies of scale related to regional and local market size. This means that cities have an important role in the analysis of regional growth and development. Among the sectors that have exhibited fast growth performance in the 2000s we find many specialized service industries, where production and supply are characterized by creativity and continuous problem solving. The cultural sector is one such sector where markets are expanding and where the activities can be assumed to be dependent on access to purchasing power and demand from people (who live in cities).

Growth influenced by economies of urbanization is somewhat different from growth influenced by manufacturing production. The performance of service markets oriented towards household consumption can be explained in a different way from that of the manufacturing sector that dominated western economies only a few decades ago. One major difference is that the service sector is usually more dependent on local demand, whereas the manufacturing industries usually have national or international markets and produce goods that are traded at a distance. The transition of the modern economy also puts an increasing emphasis on knowledge, creativity and adaptation of production and supply with respect to changes in demand, a shift which is becoming more and more important for many service markets.

Since demand has proven to be characterized by a taste for variety and preferences for new and unique experiences, these perspectives can be assumed to be highly relevant for firms in terms of remaining competitive. Globalization and the increase of contacts and information channels etc. that characterize the life of today can also be assumed to decrease the product lifecycles in many markets.

The cultural sector has been seen as a catalyst for social change and urban diversity, and an attractor of other creative individuals which drives economic growth (Landry and Bianchini, 1995; Florida, 2002). Cultural markets have also been acknowledged as a sector that belongs to industries with high growth potential. Sweden in many respects, like many other countries, has recognized cultural markets as a sector with growth potential. According to the KEA Report, even the numbers from a decade ago show the significance of such sectors when it comes to economic contribution. Between the years 2000 and 2001, cultural and experience-related economic activities added a value of 17 billion Euros, which makes 9% of overall GDP of Sweden for the given year. Based on 2003 numbers, Sweden ranks as one of the top countries in Europe with 2.4% of value added to national GDP by cultural and creative sectors only (KEA, 2006). It is also a well-known fact, however, that people engaged in this sector of the economy often have part-time jobs. Moreover, many of the so called creative firms are not always found to be very profitable. Still, regional cultural activities have been highly subsidized by the Swedish government, partly as a way of distributing culture to regions where culture otherwise

would have been highly underrepresented or non-existing, partly as an investment in regional economic growth.

The interest from a policy perspective for creative sectors is multidimensional. The cultural markets supply a number of services that are of collective goods type. In urban regions, cultural markets have an essential role in providing differentiated services that characterize the variety of localized supply, attracting people who live in the cities, and also visitors to the cities. One other perspective of interest is the transition of economies from industry-based production towards a service- and knowledge-based society. In this transition cultural markets have a noteworthy function in regions and places in terms of attracting migrants, skilled and highly educated people who appear to need the provision of these services. This also means that the cultural market can be assumed to have an induced effect on firms' location factors.

A basic reason why the attraction of people and firms may be related to culture markets and activities is that many of these services are localized activities. It is also common for the services provided in these markets to have a connection with local and regional identities. Food and restaurants markets, theatres, musical events, and sports events are all examples. It is also reasonable to assume that economies of scale are present in these markets, which in turn may serve to explain why a cumulative growth mechanism can be expected to occur in urban markets where cultural markets start to grow. It may also explain why we may assume cultural markets grow stronger in larger cities than in smaller cities.

The Swedish Agency for Economic and Regional Growth are working with an action plan for the cultural and creative sectors. The objective of this policy is to support entrepreneurs and start-ups in these sectors. The underlying assumption is that these sectors are vital parts of the economy that in the long term stimulate growth performance. One question of interest is, for example, whether the stimulation of the cultural and creative sectors is independent of the size of regional markets (or the size of cities, etc.).

One perspective on how to analyse the question is to focus on the spatial distribution of people working in this sector. Statistics show that people working with cultural activities are very much concentrated in the large metropolitan regions. One needs to explore, however, whether such conditions should be taken into account or not when policy is decided for the purpose of stimulating future growth and development. In addition, we should note that there is high unemployment among people with degrees in education aimed for cultural markets and there are a large number of people working part-time or voluntarily in the cultural sector. This means that these markets are also dependent on the organization of other markets in one way or another.

Even though major investments have been made in the cultural sector, no thorough examination has been made on the relations between culture and population growth at the regional level in Sweden.

The purpose of this paper is to examine the relationship between regional market size and the supply of culture in Swedish municipalities to find out if there are any significant relationships between culture and growth. From a policy perspective, it is important to find out if investments matter equally to all regions independent of size. It is also of interest to see if culture only matters in city centers or if cultural also attracts people to suburbs. In this analysis we employ population data for all municipalities in Sweden for 2002 and 2008. In the empirical part of the paper we analyse the spatial distribution of cultural occupation for selected groups that can be assumed to reflect creative parts of the population. The spatial distribution of these groups is also examined in relation to population growth, and in the empirical analysis we also explore if there are differences between core and surrounding municipalities (the core vs. peripheral parts of urban regions).

2. CONCEPTS AND THEORY

The city is the place where cultural change takes place and where a large proportion of all cultural services is located (Storper and Venables, 2004; Currid, 2007; Florida, Mellander and Stolarick, 2011). The role of cities in the process of cultural change has been investigated by previous research as it provides an insight into the structural changes in location patterns of modern cities. In the long run, cities are the nodes of revolutionary changes by virtue of being a stage for the start-up of civilization. Redfield and Singer (1954, pg. 54) observe that 'the story of civilization may be told as the story of cities'. Cities act as orthogenetic locations for cultural change owing to their dynamic nature. Moreover, they do not maintain the culture as it is but reflect the transformation and new arrangements of traditional cultural material (Wirth, 1938; Redfield and Singer, 1954).

Although the importance of the cultural role of cities has remained the same, it has experienced a significant change over the centuries. For instance, in the ancient world the accumulated assets determined by the historical, intellectual, political and religious characteristics of cities were the core of what was known as 'culture', whereas in today's world, 'central business districts' largely took over the symbolic meaning of modern urban centers (Redfield and Singer, 1954). This transformation of the symbolic meaning of cities is in line with the transformation in the meaning of consumption. Back in the 1950s one of the biggest discussion topics among researchers was the change in meaning of products and consumption. 'Consumption for needs' transformed into 'Need for Consuming' owing to the rise in hedonic consumption over the years (Langrehr, 1991). Previous research noted that 'People buy products for not only what they do, but also for what they mean' (Levy, 1963, pg.118). The meaning of consumption saw a significant change in the twentieth century owing to the increasing importance of the symbolic meaning of products.

Regarding the change in consumption patterns, contemporary social theorists have suggested that consumption plays an important role in how the social world is constructed (Campbell, 1991; Featherstone, 1991). Over a hundred years ago, Veblen's (1899) 'Theory of the Leisure Class' introduced the concept of 'conspicuous consumption', in which the term 'leisure class' refers to those who are not required to work because of the surplus labour produced by the 'working class'. The core idea behind the theory was that economic life is driven by social concerns rather than utilitarian purposes. The theory of conspicuous consumption, however, was opposed by mainstream economics starting from the late 1980s. It has been argued that how consumers display their wealth has changed over the years, becoming more sophisticated and subtle and less conspicuous (Canterberry, 1998). Another suggestion is that social class no longer shapes consumer behaviour. Instead, lifestyles took over the social hierarchy in terms of shaping consumption patterns (Featherstone, 1991; McIntrye, 1992). Extensive research by Inglehart and collaborators have also shown how we have moved into a post-industrial society, with new values and preferences (Inglehart, 1989, 1997; Inglehart and Baker, 2000; Inglehart and Norris, 2003; Inglehart and Welzel, 2005). Andersson and Andersson (2006) as well as Vogel (2004) have related this new preference for experiences with the increase in wage levels and decrease in working hours: individuals simply earn more money and have more time to spend it. The way in which consumption changed has made the rising importance of cultural and creative industries in today's economy more obvious more than ever. One of the main characteristics of such industries is that they are highly dependent on location. That raises the important question of 'where' people tend to consume in today's new economy. Previous researchers investigated the importance of cities in generating economic value, which has been linked with the fact that cities are also important as nodes for consumption. In their paper 'Consumer Cities', Glaeser and colleagues (2001) review the attractiveness factors and the importance of urban locations in generating demand for consumption. They note that clustering has an important effect on urban density, and leads to an area's attractiveness.

The importance of the attractiveness of urban locations is identified as a driving force behind the agglomeration of consumers in certain locations. In order to attract individuals who would generate consumption and ensure the future of an urban area, Glaeser and colleagues suggest that a city should provide a variety of service industries, amenities, aesthetics, and physical settings. They maintain that it is the attractiveness of the city which drives talented human capital. Factors such as amenities and aesthetics play an important role in attracting human capital to the city. This is of importance as the city gains economic vitality via the consumption of human capital (Glaeser et al., 2001). Shapiro (2006) also highlights that direct measures of quality of life are associated with consumer city amenities such as bars and restaurants. In her seminal work Jane Jacobs (1969) discussed how cities brings diversity via different human talents, which leads to innovation and therefore power to thrive in a location. Following Jacobs' discussion on the importance of talent and creativity in urban regions,

recent years have experienced a literature emergence on the role of human capital within an experience economy context. One of the most significant concepts is the 'Creative Class' introduced by Florida (2002a), who suggests that location matters in terms of attracting human capital, especially those who are associated with creative jobs as well as those who hold talent and knowledge as an important asset in terms of aggregate return to the economy.

Although previous literature has discussed the declining importance of location owing to globalization and the rise of technology-based industries (Cairncross, 1997; Friedman, 2005), many other studies have shown that industries keep clustering in certain areas. As suggested by a vast amount of research, the importance of where industries locate, and where people locate and consume, remains the same (Jacobs, 1969; Krugman, 1996; Glaeser, 2000; Glaeser et al., 2001; Florida, 2008; Mellander, 2008).

A significant amount of recent research indicates that agglomeration economies are one major factor explaining economic growth. This is a key finding within the field of the new economic geography. In their seminal works, Fujita et al. (1999) and Fujita and Thisse (2002) explore and analyse how economies of scale that are external to firms can be explained by spatial proximity with respect to other firms and populations, which can be referred to as agglomeration economies. External economies are external to firms and at the same time internal to regions. It is also usual to distinguish between localization economies and urbanization economies (Ohlin, 1933). The former focus on external economies that arise from spatial proximity among firms (industrial clusters), whereas the latter arise from the size of the local/regional market.

One important way of maintaining advantages from agglomeration economies for a clustering (location economies) is to create and establish knowledge spillovers. Advantages tied to the spatial market size are owed to the fact that when fixed cost can be distributed between many products or services (that can be sold in a large market) the price can be lower and more competitive. Another advantage of a large market is that it hosts a more diversified supply of goods and services compared with a smaller market. Given that consumers have a taste for variety, a diversified supply will serve as an attractor to population, and this explains why cities exhibit self-supporting cumulative growth that is explained by their size. Figure 1 illustrates the relationship between population size in Swedish municipalities and the number of consumer services available (in other words, the consumer service diversity). The consumer service variable is measured as the number of consumer service industry codes that are represented in each of the municipalities:

(Figure 1 about here)

Figure 1 illustrates how closely the relation between market size and consumer service supply is. This is fully in line with the findings by Glaeser and colleagues (2001).

Accordingly, one can draw the conclusion that the growth of cities and urbanization have sustained their importance in today's modern world, and that spatial density of population and firms are important for urban development. Wirth (1938, pg. 8) describes a city as a 'relatively large, dense, and permanent settlement of heterogeneous individuals'. Most of the earlier works on urbanization refer to density as one of the main driving forces of a city's development. Jacobs (1993) argues that the 'concentration of people' is crucial for a city to flourish. As an important asset for urban cultural development, cultural clusters are found to play an important role (Mommaas, 2004). The advantages of such clusters in an urban area include proximity to networks, suppliers, markets and other related factors (Porter, 1998). Taking the discussion to another level, Florida (2002c) argues that the concentration of bohemia in an urban area needs more investigation in order to understand the dynamics behind urban development. The main idea is that bohemian clusters create an environment to which other types of talented people and those high in human capital are attracted (Florida, 2002c).

The importance of bohemia in today's modern society has been considerable. Similarly to Jacobs (1993), Zukin (1991) and Bocock (1992), with regard to the importance of diverse bohemian clusters in an urban area, also note that the presence of such communities is of major importance in changing patterns of consumption. Early definitions of 'sub-cultural capital' (Park, 1915; Cohen, 1955) were followed by a New Age definition, owing to the transformation of those types of clusters. Brooks (2000) introduced the term 'BoBo', derived from 'bourgeois' and 'bohemia', as a new social grouping.

Florida (2002) contributes to the early investigation of the importance of bohemian or sub-cultural clusters by introducing a new measure for the bohemian population, the 'bohemian index'. His main contribution is an insight into the economic shift that made it possible to have those clusters in the first place. Moreover he observes that the presence of bohemian clusters is strongly related to the emerging knowledge economy.

Our research is built on existing literature on the role of culture and regional size and growth, and we examine this for all 290 Swedish municipalities. We hypothesize that regions with higher levels of bohemian occupations have bigger market-places and have experienced a faster population growth over time. In order to test our hypothesis, we employ data from Statistics Sweden for the years 2002 and 2008. We use bivariate and partial correlation analysis and run a number of weighted least square regressions to out that the relations are not a direct function of higher education levels.

3. METHODOLOGY AND EMPIRICAL ANALYSIS

To examine the relation between bohemian occupation and city size and growth, we use municipal data from Statistics Sweden (Statistiska Centralbyrån). We use a number of variables to illustrate this; population growth, population, bohemian occupations, bohemian occupational share and also human capital levels. Following is a detailed description of the included variables in the analysis:

Dependent Variables

Population: This is total night-time population for the years 2002 and 2008. For absolute values we use a log scale to decrease heteroscedasticity problems.

Population Growth: This is the population change between the years 2002 and 2008.

Both variables come from Statistics Sweden.

Independent Variables

Bohemians: This is the number of bohemian occupations per municipality. We employ the definition according to Florida (2002) which includes occupations related to arts, design, entertainment, sports, and media. When expressed in absolute terms, we employ a log scale to decrease heteroscedasticity problems. The variable is based on data from Statistics Sweden's occupational data (SSYK), and is for the years 2002 and 2008.

Bohemian Share (Boho): This variable is the share of the regional of the municipal labour force that has a bohemian occupation. The data are for the years 2002 and 2008.

Human Capital: Since an argument has been that the relation between bohemian occupations and growth is just a proxy for the relation between higher education levels and growth, we also employ an educational variable. It is expressed as the share of the labour force that has a university degree of three years or more, and is based on Statistics Sweden data for the same years, i.e. 2002 and 2008. This variable is primarily used as a control variable in the partial correlations. When it is used in the weighted least square regressions, it is expressed in absolute values.

The Concentrated Distribution of Bohemia

We know from literature that culture and bohemian occupations tend to be overrepresented in larger regions. But by how much? Figure 2 is a map that illustrates the concentration of bohemian occupations in Sweden for the year 2002.

(Figure 2 about here)

Clearly, bohemian occupations are overrepresented in Stockholm, the capital of Sweden, but we also see an overrepresentation in the two second largest cities, Gothenburg (Swe: Göteborg) and Malmö. Beyond these three regions, cultural activities are less present. To be able to say more about the distribution of cultural occupations, we can also relate it to the distribution of the population in general. Table 1 below illustrates the distribution of all bohemian occupations and population for the years 2002 and 2008 for the ten largest municipalities in Sweden:

(Table 1 about here)

Table 1 illustrates the concentration of bohemian occupations in bigger municipalities in Sweden. Although we find an overrepresentation of population in these cities, the over-representation of bohemian occupations is even greater. In 2002, Stockholm accounted for 8.48 per cent of the population, and at the same time 35.63 per cent of all bohemian occupations. In year 2008, this concentration increased in terms of both population and bohemians to 8.75 and 35.71 per cent respectively. The jump to the second biggest municipality, Gothenburg, is huge. Whereas the municipality accounts for 5.31 per cent of the population in 2002 and 5.40 per cent in 2008, it only accounts for 9.08 and 8.76 per cent of the bohemian occupation. In other words, bohemians are still largely overrepresented in relation to the population, but at a far lower level than what we find in the Stockholm region. Also, whereas Stockholm has increased its share over time, we find a decrease in Gothenburg with 0.32 percentage units. Also, in the Malmö municipality, we find an overrepresentation of bohemian occupation in relation to population. In 2002 Malmö accounted for 2.97 per cent of the population and in 2008 the equivalent number was 3.10 per cent. The share of bohemian occupation was about double that share – 5.16 per cent in 2002 and 5.17 per cent in 2008 – in other words, increasing over time. Taken together, the top three regions account for 16.76 percent of the population in 2002 and 49.87 per cent of the population. In 2008 the numbers were 17.25 vs. 49.64 per cent. Therefore, for both points in time, less than one-fifth of the population was living in Stockholm, Gothenburg and Malmö, but the same three regions hosted one of two bohemian occupations. This concentration decreases slightly if we examine the top ten regions, which account for approximately 25 per cent of the population and 60 per cent of the bohemian occupation. In other words, the marginal increase in population implies the same marginal increase in bohemian occupations, which both increase by approximately 10 per cent going from the top three to the top ten.

Correlation Analysis and Scatter Plots

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The distribution analysis illustrated a skewed distribution of bohemia in relation to population size. To further gauge the relations between population and bohemia, we run a correlation analysis and a number of scatter plots. Since it has been suggested that bohemia is nothing but a proxy for higher human capital levels, we also run partial correlations, where we control for human capital. Table 2 illustrates the bivariate relations.

(Table 2 about here)

Table 2 illustrates the correlations between population and bohemian occupation in the years 2002 and 2008, as well as the change between the two years. Clearly, regions with higher population levels also host higher levels of bohemian occupation. In both 2002 and 2008, the relation was 0.893. Further, a change in population between 2002 and 2008 corresponds to a related boho change of 0.888. Also, not only do higher population levels imply more bohemian occupation in absolute terms, they also imply a larger share of bohemian occupations. In 2002 this relation was 0.668 and in 2008 0.634. Initially higher shares of bohemian occupation also experienced a larger change in population over time (0.664).

This reinforces the findings in the distribution table (1 above), which illustrated that bigger cities not only host a larger number of bohemian occupations, but also a larger share. We also see that the results tend to be consistent over time, meaning that higher values in 2002 also imply higher values in 2008.

Since research has suggested that bohemian occupations are just a reflection of highly educated individuals (Glaeser, 2004) as well as a reflection of their consumption preferences, we also rerun Table 2 as partial correlations, controlling for the share of the labour force with a university degree of three years or more (human capital). Table 3 illustrates the results from the partial correlations.

(Table 3 about here)

In general, the results become slightly weaker with the human capital control variable, but they are still significant at the 0.01 level.

The strong relation between market size in terms of population and bohemian occupation can also be illustrated in scatter plots (see Figure 3):

(Figure 3 about here)

For the year 2002, the relation between bohemian occupation and population generates an R^2 value of 0.89, while the same relation in 2008 generates an R^2 of 0.901. In other words, the relation between the two has become stronger over the last decade. But to what extent is there a relation between initially high boho values and population change over the same time period? Would increases in boho occupation imply an equivalent population change? Figure 4 illustrates these relationships:

(Figure 4 about here)

In Figure 4, Stockholm, Gothenburg and Malmö have been excluded since they comprise extreme outliers. Still, we find a positive and significant relationship between initial higher values of boho occupation and population growth. We also find a larger population growth in places that also experience a larger growth in bohemian occupation.

Given what we have learnt so far, is the population growth just a reflection of regions being large to start with, or do more cultural occupations actually add to the population growth over time? To examine this further, we now move on to the regression analysis.

Regression Analysis Results

We now move to our weighted least square regression analysis, which aims to examine possible boho effects based on population growth. For this, we weight our regression by educational effects. The heterogeneous education levels are likely to introduce heteroscedasticity in the data, meaning that OLS standard errors are invalid, which in turn implies that hypothesis tests and confidence intervals are biased. In order to overcome this problem, we run a weighted least square estimation using human capital as weighted variable. The resulting estimates are more efficient and also produce correct standard errors.

We run three regressions – two for the absolute levels in 2002 and 2008, and one for the changes over time. We report weighted least square regression results in Table 4.

(Table 4 about here)

In all four regressions in Table 4, we employ a human capital weight, to decrease any heteroscedasticity problems due to differences in education levels. We know that large regions and

faster-growing regions tend to rank highly in terms of educational levels. Our regressions thereby weight for such effects, and make the estimations more efficient with correct standard errors. In regression 1, we let boho 2002 explain population 2002. The boho variable is significant at the 1 per cent level, and the regression generates an R^2 of 0.903. The same regression for 2008 generates approximately the same results, with a significant boho variable, and an R^2 of 0.906. We can assume the coefficients are biased and over-estimated and we can expect the unstandardized beta coefficients to be biased and over-estimated, possibly also capturing other effects that would affect population size. In regression 3, we let the initial values of boho and population explain the changes in population over time. In other words, are the population changes simply a reflection of initially high population levels, or do high boho values add to the explanatory power? The results suggest that initial levels of boho occupation do not significantly add to the population change explanatory power. In other words, regions with more boho occupations in 2002 have not grown any more than regions with fewer boho occupations. Moving on to equation 4, the story changes slightly. In this fourth regression, we not only explain the population changes over time with initially higher values of population and boho, but also with the change in boho over time. In other words, do investments in culture affect population growth? The results from regression 4 suggest that this is the case. The change in the boho variable from 2002 to 2008 clearly outperforms the initial boho 2002 variable. In other words, regions that grew in terms of boho occupation over the time period 2002 to 2008 experienced a larger population growth than places with only initially high boho values from the year 2002. Clearly, regression 3 and 4 suggest that initially higher levels of population will explain more of the population growth over time, but that change in boho occupations will add to the explanatory power.

The first regressions in Table 4 treat all municipalities equally. In other words, it does not make a difference if the municipality is a core region in the local labour market – the city centre where most culture tends to be located – or a surrounding municipality, that is more of a suburban type of region with a smaller cultural supply. From now on, we will make a distinction between core and surrounding municipalities. Table 5 illustrates the relations between boho and population only for core municipalities:

(Table 5 about here)

If we compare the R^2 values of regressions 1 and 2, those are slightly higher than when we run the same model for all municipalities. This means that there is a closer relationship between boho and population for both 2002 and 2008 for core municipalities. The boho coefficient is somewhat stronger than for all municipalities, and still positive and significant. For regression 3 (population changes over

time explained by initial values), we find somewhat weaker R^2 values for the core municipality regression, compared with the all-municipalities regression in Table 4. Further, the initial population variable is no longer significant. In other words, neither initial values of boho nor population explain population change over time. The result in model 4 is somewhat different, in that we let changes in boho together with initial population levels explain changes in population over time. This regression generates an R^2 value of 0.863, indicating that the changes in boho will explain a lot more of the population change than the initial boho values. It is also interesting to note that the initial population values become significant in this multivariate context, whereas they were insignificant in combination with initial boho values in equation 3. If we run equation 4 as an OLS regression and control for collinearity issues, the VIF values are below 1.3, which excludes the possibility of the major increase in the R2 value being driven by multicollinearity between population and changes in boho.

What about the surrounding municipalities? Do they mainly rely on what is being offered in the core municipality of the local labour market, or would it actually have an effect if culture were supplied to the own municipality as well? In Table 6 below, we let population and population growth in surrounding municipalities be a function of boho values in the core as well as in the own municipality. This is still combined with initial population values – both for the core and for the own municipality. In addition, we add three dummies, one for each big metropolitan region, to rule out any eventual core effects merely reflecting the region being a bigger city.

(Table 6 about here)

In all four regressions in Table 6 the dependent variable is population or population growth in suburbs, which is a function of bohos and population, not only in the own municipality, but also of the same supply in the core municipality within the local labour market. With regard to regressions 1 and 2, they both generate R2 values of 0.84 to 0.87. This indicates a strong relationship between boho occupations and population. Interestingly, though, the own boho variable is much more strongly related to population than the core region boho variable. In 2002, core boho is not even significant. In 2008, it is significant at the 1 per cent level, but still at a much weaker level than the own boho variable. This implies that the relationship between what is being offered in the own municipality in terms of culture plays a bigger role than what is being offered in the core region. The only large fixed effect for city that is significant is the Gothenburg dummy (positive), but only for the year 2002.

Now we turn to the results of equations 3 and 4, which examine the population changes over time. Equation 3 once more lets this be a function of the initial values. The regression generates an R2 of 0.602, and the only variable (beside the fixed effect dummies) that is significant is the initial population level in the own municipality. In other words, we see no relation between initial boho

levels (either in the core or in the own municipality) and population growth; nor do we find any significant relation between surrounding municipality population growth and initial population levels in the core region. This seems to be strongly captured, however, by the three big city dummies – Stockholm, Gothenburg, and Malmö – which are all highly significant and seem to explain much of the surrounding municipality population growth over the last decade. In equation 4, change in population in surrounding municipalities is now a function of a change in boho (in the core as well as in the own municipality), still in combination initial population values (core and own). Above this, we add the same big city dummies.

Once more, we find a similar result to those in equations 1 to 3. It is what the own municipality supplies that counts. Changes in boho and initial higher levels of population in the core municipality have little effect on population growth in the surrounding municipalities. Boho changes in the own municipality, however, together with high initial population levels in the own municipality, explain a lot of the variation in population growth in surrounding municipalities. It is also interesting to note that changes in boho in the own municipality seem to capture a lot of the big city dummy power, since all three city dummies in this context are insignificant.

4. CONCLUSION

In this paper we examine the relationship between regional market size and supply of culture in Swedish municipalities. The spatial supply of culture has been defined as location distribution of so-called bohemians, using the definition presented by Florida (2002). Bohemians include people with occupations related to arts, design, entertainment, sports, and media. The explorative results indicate that bohemians are overrepresented in relation to the population in the largest metropolitan regions in Sweden, particularly in the Stockholm region. Around half of all bohemians live in Stockholm, Gothenburg and Malmö. This geographical structure appears as very significant when we map the spatial distribution of bohemians among Swedish municipalities.

The descriptive statistics show that regional market size (in terms of population) clearly correlates with bohemian occupation. There are also signs that indicate that the relation between regional size and bohemian occupation has increased during the 2000s. We also find that population growth appears to correlate with bohemian occupation. One conclusion from our analysis is that it is reasonable to expect that culture activities have a positive influence on population growth. Regions that exhibit a growth of bohemian occupation between 2002 and 2008 also display population growth.

When we analyse the presence of differences between the core and peripheral parts of the functional regions in Sweden, we somewhat surprisingly find that there are not really any signs of any significant differences between these two types of municipalities. In particular we find that in the peripheral municipalities (suburbs) that surround the core municipalities the occupations in the creative and

cultural sectors are more correlated to population growth in these municipalities than proximity to creative and cultural occupations in the core parts of the functional regions. This means that our study supports the idea of a general policy ambition instead of an alternative strategy to focus resources on only the core municipalities, and that surrounding municipalities with higher shares of bohemians have grown faster than those with lower levels.

The results may be affected by the increase in housing values over the last decade. Jacobs once stated that "old ideas can sometimes use new buildings. New ideas must use old buildings". New innovations, in the beginning of the product life cycle, are often less profitable and has stronger budget constraints. Innovative activities must therefore quite often locate where housing costs are the lower. The same holds for many cultural activities, and the increased housing values has often pushed them out from the expensive city centers into suburb areas. But once they are there, they may function as a local amenity, and becomes a factor that increases the quality of life. Our results suggest, that not only bigger city centers but also suburbs that manage to attract the cultural workers, will be more attractive places for people. A substantial share of the bohemians may also be characterized as lifestyle entrepreneurs that usually are assumed to influence multiple perspectives of choices of occupation, place to live, preferences for consumption, etc.

Our results show that culture and population growth go hand in hand and that this not only holds for the very big cities, even though the cultural sector is most overrepresented here. Certainly, cultural activities gain from agglomeration effects. Even though culture is subsidized by the Swedish public sector in less populated regions, we still find almost fifty percent of the cultural workers in Stockholm. At the same time, the region only accounts for approximately 25 percent of the population. Given large fixed costs related to certain types of cultural activities, e.g. opera houses and major theatre scenes, Stockholm will continue to be the cultural center of Sweden. For medium and small sized regions it is and probably will continue to be hard to attract cultural workers. But, our results suggest that attracting culture and investing in cultural activities do affect population growth also in these places. Moreover, even suburbs with higher levels of cultural occupations have experienced higher levels of population growth over the last decade. From a policy perspective, this is an important finding.

Cultural investments are often criticized as a waste of tax money which could have been used more efficiently elsewhere, and the cultural sector is often considered as an absorber of tax money rather than a contributor. Our results suggest that investments in culture seem to pay off also in smaller regions and suburbs and the more cultural occupations that are located in these areas, the more people they attract. One important perspective of the cultural sector is its characteristics as a public good. Furthermore, public goods usually are divided into local and global public goods. Given that a substantial share of the bohemians are involved in activities that are to be defined as local public

goods, it is most reasonable that municipalities are involved in the provision of services from this sector if the free market would not yield an efficient market solution. One possible way of looking at this phenomenon is similar to the so-called Tiebout principle of how people "vote with their feet" which means that people and households make their choice of where to live dependent on the provision of local public goods (a bundle) that also can be financed by local tax. In the Tiebout framework this can be seen as one type of competition between places.

The significant relationship between population growth and the bohemian sector is also interesting from a policy perspective, if investments in culture increase the probability of a positive net migration. If this is the case, there might be reasons from a regional growth perspective to subsidize cultural activities with tax money. Further, many more rural areas are currently going through a major transition, where a blue-collar labor force systematically is being exchanged for a more highly educated group of people. For example, the Swedish mining industry is becoming more technologically advanced and demands a new type of highly skilled worker. At the same time, the regions where we find natural resource-based industries are among the least attractive to highly educated people, and these regions have experienced negative net-migration for years. Investment in culture may be one way to reverse this flow of talent loss. We would encourage future research to explore the relationship between culture investments and population growth in rural areas.

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Tables:

Table 1: Population and Bohemian Distributions in 2002 and 2008

Rank	Region	Bohemians 2002	Population 2002	Bohemians 2008	Population 2008
1	Stockholm	35,63%	8,48%	35,71%	8,75%
2	Göteborg	9,08%	5,31%	8,76%	5,40%
3	Malmö	5,16%	2,97%	5,17%	3,10%
	∑	49,87%	16,76%	49,64%	17,25%
4	Uppsala	2,00%	2,01%	1,99%	2,06%
5	Solna	1,76%	0,64%	1,75%	0,71%
6	Helsingborg	1,84%	1,34%	1,72%	1,37%
7	Örebro	1,25%	1,40%	1,30%	1,43%
8	Borås	1,32%	1,10%	1,28%	1,10%
9	Umeå	1,32%	1,19%	1,25%	1,22%
10	Jönköping	1,10%	1,33%	1,24%	1,35%
	∑	60,46%	25,77%	60,17%	26,49%

Table 2: Correlations for Bohemians (boho) and Population for the Years 2002 and 2008

	Population 2002	Population 2008	Change in Population 2002-2008
Boho 2002	.893***	.895***	.894***
Boho 2008	.891***	.893***	.894***
Change in boho 2002 to 2008	.876***	.879***	.888***
Boho Share 2002	.668***	670***	664***
Boho Share 2008	.632***	.634***	.637***

Table 3: Partial correlations for bohos and population, controlled for human capital

	Population 2002	Population 2008	Change in Population 2002-2008
Boho 2002	.879***	.883***	.882***
Boho 2008	.877***	.880***	.881***
Change in Boho 2002 to 2008	.857***	.861***	.873***
Boho Share 2002	.510***	.512***	.502***
Boho Share 2008	.466***	.468***	.472***

Table 4: Human capital weighted regressions for population and population growth

	(Eq 1) Ln Population 2002	(Eq 2) Ln Population 2008	(Eq 3) Change in Population 2002 to 2008	(Eq 4) Change in Population 2002 to 2008
Ln Boho 2002	.596***		186.216	-50.642
	(51.910)		(.774)	(-.384)
Ln Boho 2008		.617 ***		
		(52.826)		
Change in Boho 2002-2008				16.883***
				(25.935)
Ln Population 2002			1453.447***	1071.614
			(3.885)	(5.088)
R2	.903	.906	.497	.799
N	289	289	289	289

Table 5: Human capital weighted regressions for population and population growth in core municipalities

	(Eq 1) Ln Population 2002	(Eq 2) Ln Population 2008	(Eq 3) Change in Population 2002 to 2008	(Eq 4) Change in Population 2002 to 2008
Ln Boho 2002	.639***		1121.250	
	(40.170)		(1.250)	
Ln Boho 2008		.656 ***		
		(39.390)		
Change in Boho 2002-2008				16.386***
				(16.997)
Ln Population 2002			931.669	1217.753***
			(.687)	(6.192)
R2	.953	.952	.367	.863
N	80	80	80	80

Table 6: Regressions for population and population growth in surrounding municipalities explained by the development in the own, as well as the core, municipality (human capital weighted)

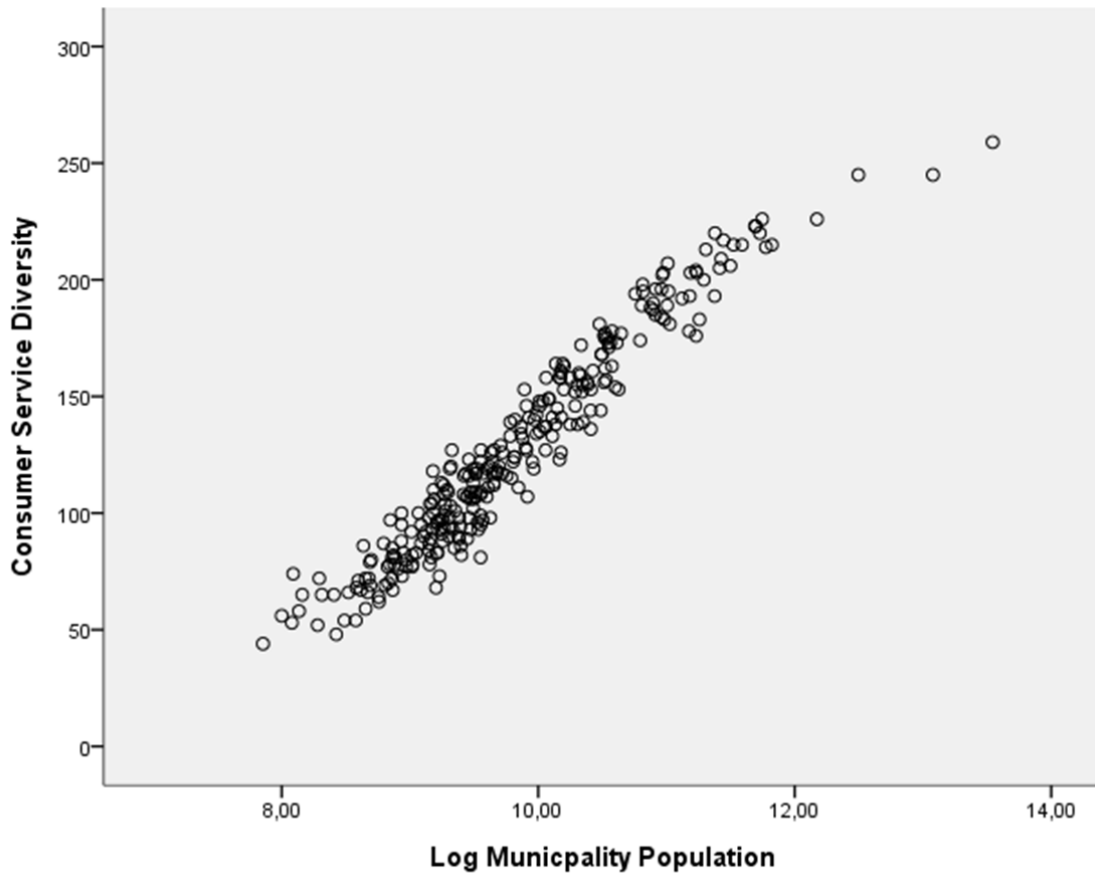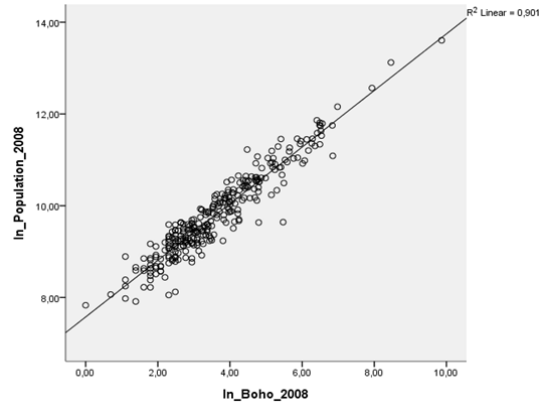| | (Eq 1) | (Eq 2) | (Eq 3) | (Eq 4) |
	Ln Population 2002	Ln Population 2008	Change in Population 2002 to 2008	Change in Population 2002 to 2008
Ln Boho 2002 Core	.024		-130.888	
	(1.227)		(-.712)	
Ln Boho 2002 Own	.530***		98.743	
	(26.829)		(.821)	
Ln Boho 2008		.062 ***		
		(3.637)		
Ln Boho 2008 Own		.568***		
		(29.733)		
Change in Boho 2002-2008 Core				2.036
				(1.415)
Change in Boho 2002-2008 Own				28.016***
				(9.705)
Ln Population 2002 Core			248.660	-10.622
			(.876)	(-.115)
Ln Population 2002 Own			560.470***	434.098***
			(2.777)	(5.286)
Stockholm Dummy	.151	-.061	2073.689***	-4179.804
	(1.462)	(-.625)	(6.673)	(-1.082)
Gothenburg Dummy	.251***	.044	946.247***	-253.826
	(2.603)	(.471)	(2.841)	(-.353)
Malmö Dummy	.096	-.0009	1446.879***	305.693
	(1.036)	(-.0001)	(4.862)	(.577)
R2	.843	.873	.602	.729
N	209	209	209	209

Figures:

Figure 1: Consumer Service Diversity and Market Size for Swedish Municipalities 2003

Figure 2: Heatmap based on a location quotient for the Swedish bohemian occupations in year 2002 (Map by Kevin Stolarick, Martin Prosperity Institute)
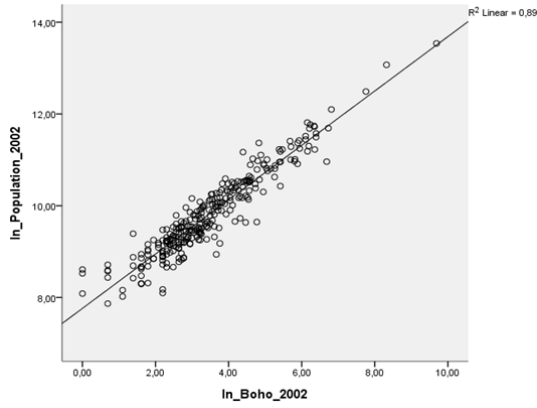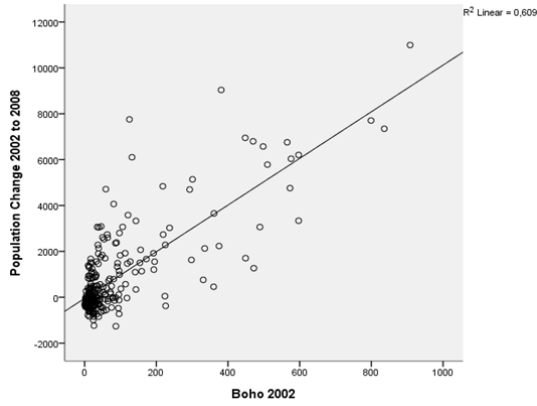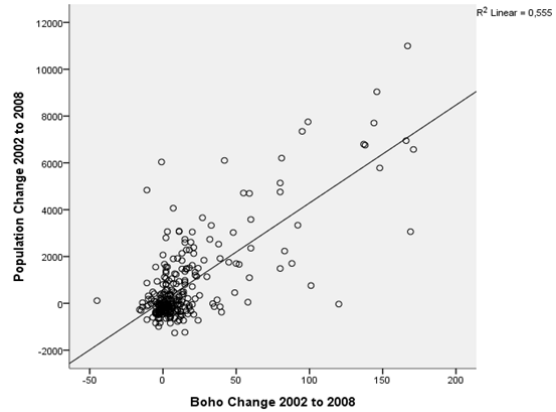
Bohos and Market Size in 2002   Bohos and Market Size in 2008

Figure 3: The relationship between bohemian occupation and market size in terms of population for the years 2002 and 2008

Boho in 2002 and Population Change   Boho and Population Change 2002 to 2008

Figure 4: The relationship between bohemian occupation and market size changes in terms of population between the years 2002 and 2008

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