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Exploring the Complexity of Location Choices of the Creative Class in Europe: Evidence from the EU Labor Force Survey 1995–2010 [†]

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†   This paper is an extension of a working paper included in the first author's unpublished Ph.D. thesis titled "The Future of the Creative Economy in Europe: an Empirical Analysis across the Main European Regions" (University of Birmingham, the UK, 2015). About 90% of the former content has been changed or updated.

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Abstract: This paper proposes a new idea for the current argument over Florida's cultural policies, as location choices of the creative class is a complex process involving some basic aspects of socio-economic progress. Based on the European Labor Force Survey (EU LFE) dataset, tolerance and openness indicators which represent the quality of a "people climate" are found to be positively correlated with the creative class's location in large regions and less so in smaller ones, where business climate-related parameters, i.e., the quality of local governments and the location of universities, have stronger positive effects on locational choices of the creative class. Moreover, graduates with non-creative jobs and creative professionals (i.e., workers who provide creative solutions during the work process such as high-tech technicians or legal and healthcare workers) are concerned more about the people climate, while creative workers with a degree and a creative core (e.g., workers who provide original ideas such as scientists, engineers and artists) are more likely to prioritize a business climate. Therefore, we argue that the promotion of a "tolerant" climate, as Florida advocates, is not a one-size-fits-all solution. Instead, policy makers should appropriately relate different preferences of creative workers to their unique strengths. This provides more insights into defining the concept of creativity beyond prioritized individual success, as well as understanding the preferences and actual needs of highly skilled workers in Europe.

Keywords: the creative class; location choices; tolerance; institution

1. Introduction

The early growth theories such as the classical location theory focused on the effect of large industries or firms' agglomeration. For instance, the agglomeration of industries and firms was believed to effectively reduce the cost of transportation and increase the possibility of knowledge sharing [1,2]. In the age of Fordism, the role of firms, particularly those that were multinational enterprises, were further highlighted, and decentralized, non-standardized production process was considered as the most important factor in determining the economic performance of a region or even a nation [3]. However, if the concept of economic sustainability is defined as a particular type of development that should not damage resources for future development and should remain for the

long term [4], then the role of human capital has yet been examined in that context; in most cases, it was only seen as a cost to be minimized.

Changes were made with a socio-economic shift from an industrial to a post-industrial economy. With the notable feature of non-standardized production, discussing the sustainable economic growth based on the context of the rise of knowledge economy seemed to focus much more on the concept of human capital [5]. In other words, the exploration of economic sustainability has been further combined with human and social sustainability as well as related investments including education, job training and work experience accumulation, or establishing reciprocal, harmony and cooperative relationships between different social groups [6], as the impact of labor and skill divisions on economic growth have become more important than ever. Because human capital is an abstract concept, the role of human capital within the process of sustainable economic growth has been widely discussed. For instance, Glaeser [7] believed that entrepreneurship massively generates economic activities which can be used as a good proxy of human capital to explain the disparity in economic growth. Acemoglu and Dell [8] found the half of income variation can be explained by the difference in educational attainment levels in the United States.

Among these complementary or competing theories, the creative class theory [9,10], which was initialized in 2002 by Richard Florida, has widely attracted the attention of scholars, and has been hotly debated among Western policy makers over the past two decades. Under the dominant milieu of creative city/region development since the new millennium [11], the idea of the creative class theory advocates a creativity competition among cities and regions, which is derived from a certain group of knowledge workers (i.e., writers, journalists, actors, scientists, higher education teachers, high-tech technicians, etc.) with different occupational backgrounds. Florida proposed a "cultural consumption × talents agglomeration × sustainable growth" policy line for those areas with an accelerating retreat of Fordism slow growth from traditional forms of manufacturing, which is also easy to map onto the existing policy framework with low costs. Along this line of thought, the creative class is claimed to prefer non-traditional lifestyles in diversified communities, thus there is a need for local government to build up "tolerant" amenities. Creative workers will then move to areas that are attractive enough to them. This agglomeration will further become a symbol of the place where they are living and working at that indicates the level of openness and tolerance. Eventually, more creative workers, other types of human capital and creative industries will follow too—a virtuous circle.

Florida's creative class thesis has provided policy makers with a grand theoretical framework regarding how the sustainable economic growth can be realized by developing human capital from a "cultural" perspective. It appears that the basic assumptions of sustainable development (i.e., durability and low resource consumption) can be easily satisfied as long as a policy maker follows Florida's claim to create an appropriate "climate". However, various studies, from different perspectives, have proved that Florida's empirical claims were disconnected with the reality of socio-economic development. The criticism mainly related to many details of the initial theoretical framework Florida proposed such as: the overlap between traditional human capital measures (i.e., graduates) and creative occupations [12,13]; the unclear definition of "class" that is supposedly to have common behaviors at the collective level [14]; endogeneity and multicollinearity issues related to the variables Florida generated [15]; social restrictions that may be caused by such a creativity-engendering development [16]. In addition, the core assumption of the creative class theory that assumes "the creative class follows tolerance and then jobs follow the creative class" has been an intensive subject for debate. In many contexts, the level of tolerance ignored the spatial distribution of creative workers (e.g., References [17–23]). The hypothesis that a 'highly tolerant society attracts more creative talents' is only likely to be verified when the samples selected are large cities. Many smaller-sized cities do not have the agglomeration ability to quickly develop social diversity and variety, but the innovation economy has also grown rapidly in the past two decades [24,25].

Therefore, and not surprisingly, the initial theoretical framework that Florida proposed needs to be thoroughly revised, particularly since the early 2000s, in the context of increasing urban/regional

conflicts caused by financial crises, nationalism, xenophobic racism, anti-globalization or the rise of the right wing governments in many developed countries. These new socio-economic tendencies drive a wedge straight into Florida's theory and put forward a new challenge to regional and urban economists: how can the hazy concept of creativity and the associated concept of a people climate be given a new meaning in the next round of sustainable development? In this context, it has to be admitted that the creative theory has exerted profound influence in the domain of sustainable economic growth. However, there is also an urgent need to situate these concepts in the current socio-political context and moment, and to further develop a language to describe determinants of growth beyond the stereotypes of "creativity" or "tolerance".

In addressing these shortcomings, the present study focus on the most debated part of the creative class thesis i.e., the advocacy of tolerance (or people climate). By exploring the actual preferences of creative workers in different urban contexts, we expect to bring more insights about how creative talents can be effectively formed as a "community" with an accurately assigned "climate", which in turn plays a crucial role in determining sustainable economic growth in Europe. In this context, this paper does not attempt to valid the creative class thesis in a different context. Rather, being enlightened by Florida's seminal work on the creative class, the dimension of "climate" is extended to a broader context of socio-economic development. Specifically, we seek appropriate answers to the following research questions: (1) what are the locational choices of the creative class in medium or small sized regions? (2) apart from a desire of tolerant milieu, what else does the creative class prefer? Given the fact that little research has been carried out in relation to filling the above research gaps from an integrated perspective, this study provides a meaningful approach with respect to reconciling the inconsistency between the consumption-oriented urban development strategies represented by the creative class thesis and realistic demands for socio-economic sustainability.

This study provides four main contributions to the literature of regional economics. Frist, a lack of clarity still exists in determining how socio-economic factors affect the flow of the creative class at different sub-regional levels. Herein, both the popular indicators that the existing research employed and the indicators that represent the quality of local institution are incorporated, expanding the research scope from focusing on "building up selected amenities" to broader social development. Second, there is no evidence to support the causal relationships proposed by Florida, thus advanced econometric models including the dynamic GMM (Generalized Method of Moments) model are employed in this study. Third, the creative class includes various occupations and its definition is a vague concept that represents the common characteristics of a particular sub-population. The use of the European Labor Force Survey (EU LFE) data helps to explore the differential preferences of creative sub-groups. Finally, the reconstruction of the original creative class theory is highlighted, and a more pragmatic approach, which enables policy makers to consider how to offset the negative effects of creative class urbanism while maximizing the capacity of the creative economy, is also suggested.

The rest of this paper is arranged as follows: A literature review and hypotheses development are illustrated in Section 2; Section 3 introduces the methodological approach employed in the paper and describes the data; Section 4 demonstrates the main findings from various perspectives; Section 5 discusses theoretical and managerial implications; The limitations are presented in Section 6.

2. Literature Review

2.1. The Creative Class Thesis

Florida emphasized that the creative class is not only defined as a group of workers with different economic values. What unites the creative class is not only their values and attributes, but also their shared perceptions of cultural preferences and social identities. The creative class can be divided into two sub-categories. The first subgroup is the super creative core, which includes "scientists, engineers, university professors, poets and novelists, artists, entertainers, actors, designers and architects, as well as the thought leadership of the modern society: notification writers, editors, cultural figures, think-tank

researchers, analysts and other opinion makers" [10] (p. 38). In addition, bohemians, made up of "poets and novelists, artists, entertainers, actors, designers and architects", are a symbol of the creative class because their geographical distribution represents locational levels of tolerance and diversity. The second subgroup is creative professionals including "high-tech, financial services, the legal and health care professions" [10] (p. 39). Instead of directly creating new ideas, these people provide creative solutions to specific problems based on complex systems of knowledge. As mentioned previously, Florida's remedy for developing a local economy in a sustainable way is not time-consuming and can be easily implemented with low costs; building up selected "tolerant" and "open" climates (e.g., adding more cultural elements in neighborhoods, more cafes and restaurants for people exchange and share knowledge or more flexible, environmental friendly transportation system) satisfies creative workers' value and functional demands, in addition to traditional psychical and monetary incentives. This is the key and most important pre-condition to achieving sustainable development for a city or region, as tolerance will act like a magnet, casting a snow-balling effect on continuously attracting and retaining creative talents.

2.2. Class, Value and Economic Growth

Since the creative class thesis has been put forward in 2002, it has received both praise and critiques. Many scholars believed that the philosophical underpinning of the creative class does not follow the Marxian model of "class" analysis [14]. Although the creative class claimed by Florida has special lifestyles and common creative abilities, so far little evidence has shown that the creative class has a comparatively unique position within the production process or that these different workers act as a "class" and are self-awakening. As a result, the definition of the creative class may be only a simplistic taxonomy. It appears that the division between "creative" and "non-creative" occupations ignores the possibly complex nature that a class could have in various social forms and just directly jumps to the assumption of diversity and openness. Peck [26] criticized this type of creativity-based development strategy as being just old wine in a new bottle. Many of those cultural advocacies, in fact, are not different to those consumption-oriented fast policies since late 1980s, such as fostering competition between private and public investments among different cities and regions in the United States. Since urban/regional policy makers lack effective methods to revive local economies from the stagnant industrial system, the creative class theory fits well in the fast policy market of urban neoliberalism.

With this in mind, many empirical studies have revealed that the positive effect of Florida's policy recommendations on sustainable economic growth for a city or region is not clear. For instance, Lewis and Donald [25] thought some of factors such as the gay/lesbian index for expressing the level of tolerance/openness were only deliberately designed in order to favor particular types of studies. Therefore, Florida might have only provided some expected results based on synthetic indicators to confirm the creative class theory. Luger [27] took Singapore as an example and demonstrated that it is not easy to transfer the essential value of creative urbanism to countries with different socio-political systems. In many cases, state-driven creativity-engendering policies have deviated from their original intentions. Instead of becoming more inclusive, more creative and more equitable, many cities or regions, with aid from creativity policies such as the creative class thesis, have gradually suffered from social issues such as gentrification [28] and social restriction [16]. However, as being the main body of sustainable economic development, local talent groups were not benefiting. There are also many similar studies (e.g., References [29,30]), all converging at the point that "the multivalence of the cultural economy requires a balance between agendas, focuses on generalization of macroscale trends and interscalar processes" [31] (p. 557).

2.3. Preference Difference: From the Perspective of Spatial Unit

In line with the above discussion, another strand of literature also revealed that the concept of tolerance, as an important theoretical section of the creative class theory, failed to provide an accurate understanding of the actual needs of creative workers in many different contexts. Following Florida's

changing prognosis, it appears that all cities have an opportunity to become a creative powerhouse as long as a tolerant climate is successfully created. Even for small or non-metropolitan areas, without a "critical mass", at least they can have a "shot" of being labeled as "tolerantly creative" [9]. However, many studies have shown that the relationship between the spatial distribution of the creative class and the level of tolerance or economic growth is not evident in smaller regions. For example, even without Florida's remedies, non-metropolitan areas could have experienced steady economic growth over the past two decades. Compared to the effect of tolerance, Nelson [32] revealed that the employment growth in small Canadian cities was mainly determined by the reserve of cultural capital and human capital that was more generally defined (i.e., university graduates). Instead of heavily investing in infrastructure as suggested by Florida, small regions should improve their connections with metropolitan areas in terms of communication and transportation [24]. Haisch and Klopper [33] further revealed that tolerance, especially towards immigrants and homosexual couples, is a quite dynamic concept, with major differences between and within functional urban areas.

The above discussion leads to a conclusion that the preferences of the creative class may vary in different contexts. Therefore, follow-up studies started to evaluate cities' or regions' unique advantages first before implementing Florida's strategies to attract and retain the creative class. For instance, Kolenda and Liu [34] subdivided the broadly defined metropolitan area into three groups: The first group is creative flight cities, where both the number and share of creative jobs decline; the second group is creative sprawl cities, where creative jobs increase in number but decrease in share; the third group is creative engine cities, where creative jobs increase both in terms of the number and the share. After studying the case of Shanghai in China, Rao and Dai [35] believed that creative class will be attracted by open and welcoming communities, and the social tolerance in the community has a major impact for local artists. Even though these studies show a strong desire for a better explanation of the relationship between the creative class and tolerance, the specific investigations have not been completed, especially in Europe, owing to the limitations of the data or models available at that time.

2.4. Preference Difference: From the Perspective of Creative Sub-Groups

Not surprisingly, the issue of "hierarchical discrimination" on the locational choices of creative workers leads to a question about the construct validity of the creative class itself [36]. Florida's theory that preferences among different creative occupations remain similar is debatable [36]. The creative class includes occupations such as artists, scientists, high-tech technicians or managers which are believed to have potentially productive interactions [37]. However, these knowledge workers involved in different tasks may be conceptually different too, as the factor analysis showed that these occupations do not have much in common [18]. More importantly, there seems to be ambiguity concerning the density of bohemian workers as one of the crucial factors in the creative class theory. For example, Markusen [38] found that it plays either a facilitating or an inhibiting role in the urban economy, and it appears that the attraction of a city to bohemian people is not directly linked to the richness of a "climate", but is dependent on the local government's investment decisions involving artistic organizations. Therefore, it is not plausible to argue that bohemians and other creative occupations like scientists, engineers or managers share similar values and function in the same way within an economic system.

With this in mind, it will be more ideal to divide the grand category of creative workers into less different sub-categories according to the dynamic nature of the knowledge-intensive economy [39]. A significant body of research has attempted to investigate the features varies in creative occupations from different perspectives. According to the further discussion of Asheim and Hansen [40], there are three types of creative occupations. They respectively are scientific climate related-analytical occupations, business climate-related synthetical occupations and artistic climate-related symbolic occupations. Asheim et al. [41] reviewed the distinctions in preferences among creative workers and pointed out that suburbs and small cities are more likely to attract engineering-based creative workers rather than those with symbolic jobs. By differentiating creative

workers according to their economic functions, Krätke [42] identified in Germany that only creative workers engaged in scientific, technological and artistic fields positively influence regional performance from the perspective of innovative and sustainable growth. However, research settings, methodologies and perspectives prevent us from reaching consistent conclusions, and these studies, to certain degree, only measured creativity in terms of individualistic values while excluding social values. Thus, it is still sensible to investigate the differential preferences of creative subgroups in a broader context.

2.5. Hypotheses Development

Compared to the early discussion focused on the original concepts and theoretical framework Florida proposed, many recent studies still adopted the creative class as a useful theoretical concept and combined it with other dimensions such as economic or social theories. For example, Mellander et al. [43] showed that the creatives vs. non-creatives division can explain the difference in productivity in the workplace. Zhao et al. [44] showed that there is indeed something more than just being a graduate associated with creative workers when explaining the disparity in GVA growth in Europe. However, it has to be admitted that the present research is no longer mired in the debate regarding how to build up a selected milieu or has fallen back on the inaccurate premise of a class. Therefore, in association with the existing research gaps including: (1) the ambiguous link between the general concept of urban amenities containing both a business climate and people climate as well as the uneven spatial distribution of population with creative occupations; (2) the ambiguous preferences of creative population across cities or regions of varying sizes, the current analysis is grounded on the concept of the creative class, while at the same time also covers other essential dimensions of socio-economic development. The findings will shed new light on understanding which aspects the stereotypical advocacy of cultural consumption disconnects with for the socio-economic reality in Europe, and how the effect of highly skilled working groups on sustainable economic growth can be managed and stimulated, particularly based on the much more dramatic socio-economic and demographic changes in Europe. Therefore, we formulate the following hypotheses:

Hypothesis 1. *In the major regions in Europe, the locational choice of bohemians and non-local workers has a strong effect on the location choice of the creative class, and this effect may vary across different sized regions. This is the first step estimation, as most of previous studies used the disparity in the density of bohemians or non-local workers to represent the differences in the people climate and only reached mixed conclusions.*

Hypothesis 2. *In the major regions in Europe, the quality of the business climate also plays a crucial role in determining the spatial distribution of creative workers, and this pattern may also vary across different sizes of regions. As people become increasingly aware of the emerging significance of the complex interconnections between various socio-economic aspects, these concepts, which are different from the people climate that Florida defined, are categorized as elements that signal the business climate [45]. During measurement, the well-known variables such as the level of social provision or the service quality of local government and university location were included. We further develop this hypothesis in response to the argument that creative workers may have specific, alternative preferences in different contexts.*

Hypothesis 3. *In the major regions in Europe, different creative occupations may have different preferences. This is the final step to verify the possible heterogeneity across different creative occupations. We further categorize the whole creative class into two sub-groups, namely (1) creative workers with a degree (i.e., creative graduates) and creative workers without a degree (i.e., creative non-graduates) and (2) the creative core and creative professionals, and attempt to explore if these sub-groups have different preferences towards a "climate". However, it is worth mentioning that it is difficult to conduct more detailed analysis with respect to the context of "different creative occupations in different sizes of regions", as our experimental analysis showed that the estimation of the total number of each creative sub-groups is very inaccurate at this level.*

3. Methodology

3.1. Data and Variables

　　The data were obtained from the EU LFS covering the period between 1995 and 2010. As the regional account is available in the EU LFS dataset (i.e., 3-digit level occupation category and 2-digit level region category), the variables employed in this study can be generated at the regional level, including the share of the creative class/non-creative workers over the total population. In particular, the locational quotient, which is estimated by the regional share of creative workers over its national share, is used to estimate the spatial distribution patterns of the creative class in different areas of a country.

1.　Creative occupations: We attempt to match the definition of the creative class as closely as possible to Florida's [10], as the definition of occupation is quite different in Europe. As mentioned earlier, we aim to not only measure the creative core and creative professionals, but also creative workers with and without university degrees, with the purpose to reflect the difference of preference across different creative sub-groups.

2.　Tolerance: Since measuring the density of the homosexual population is a sensitive topic in Europe and the relevant data is not available, "tolerance" is estimated by the locational quotient of "bohemians". Following Lorenze and Andersen [46], it assumes that as more bohemian workers such as artists gathered in a place, this place is more likely to be tolerant.

3.　Openness: We further use the level of openness as an alternative indicator to represent the quality of the people climate, because many European studies also sees a region's high share of migrant workers as a clear sign of high level social inclusion. Similar to tolerance, the level of openness is estimated as a locational quotient which is estimated by the regional percentage of workers born abroad over its national percentage.

4.　Universities: Since a significant proportion of creative workers have university degrees, there is a clear link between the spatial distribution of creative workers and university locations. This is particularly evident in Europe because universities are often co-located with high-tech industries, research institutes and supporting services within a regional innovation system, where most of creative workers are engaged in their intellectual works. Here, the locational of universities is estimated by the regional percentage of university teachers over its national percentage. It is assumed that a region with more university teachers has more universities with a higher quality of education compared to a region with less teachers.

5.　Social infrastructure: Following the concept of social provision proposed by Anderson et al. [47], the indicator, which is measured based on the population of workers in social and health care and education services in the total population, is used to demonstrate the quality of the social welfare system. If an area has more employees in social and health care and educational sectors, then the area will provide better social welfare to the local residents.

6.　Performance of local government: The EQI index is adopted for measuring the performance of regional government [48]. It is believed that a "good" local government contributes to the higher-level activities of creative employees, while providing them with social security.

As EQI is time-invariant, it thus needs interact with other time-variant indicators so as to accommodate the data panel structure. Therefore, the share of workers in the sector of public administration is used instead to represent the performance of a local government in the short term. The assumption made here resembles the definition of social provision [47]; in this case, changes in employment in public sectors may influence the overall operating efficiency of a local government. This assumption can be deemed plausible as the size of a local government in democratic European countries is strictly determined by a local council and voters. If government employees are added or cut, the corresponding effect is straightforward to the performance of a local government e.g., more receptionists will facilitate the process of inquiries. Therefore, interacting EQI with the proportion of workers in the sector of

public administration can solve the time-invariant issue, and the result should be interpreted as how the overall performance of a local government affects the locational choice of creative employees through the changes in public administration employment.

3.2. Model Specification

Two econometric models are utilized to test Hypothesis 1 to 3 that creative employees are attracted to open and tolerant places. The basic approach is the fixed effects model, the findings from which are reinforced by a dynamic system GMM model allowing for lagged adjustment, but from a long-run perspective.

The basic model is shown as below:

$$LCR_{i,t} = \alpha_i + \beta_1 LB_{i,t} + \beta_2 LO_{i,t} + \beta_3 LT_{i,t} + \beta_4 S_{i,t} + \beta_5 L_{i,t} + \beta_6 LEQI_{i,t} + \tau_t + \delta_i + \mu_{i,t}. \qquad (1)$$

We explicitly model the locational choice of creative class (LCR) as the function of the locational choices of bohemians (LB), foreign-born workers (LO), university teachers (LT), the quality of local social provision (S) and the effect of local political institution (L and LEQI). All variables are log-transformed. For controlling unobservable time invariant effects and other time-invariant observables that are not captured by this model, δ_i is included. In addition, we also introduce time dummies (τ_t) to illustrate macroeconomic shocks of all regions in each year. It is worth mentioning that the issue of data overlap may bias the results of this study (This assumption can be deemed plausible as the size of a local government in democratic European countries is strictly determined by local council and voters. If government employees are added or cut, the corresponding effect is straightforward to the performance of a local government e.g., more receptionists will facilitate the process of inquiries). For example, the dependent variable "the creative class" also overlapped with several independent variables such as bohemians, university teachers or employees engaged in social services and public administrations. Therefore, they were excluded from the entire creative class. For the same reason, higher education teachers were excluded from the sub-category of the creative core, as were those creative migrants, higher education teachers and bohemians with university degrees from the sub-category of creative graduates.

Concerning the potential endogeneity that cannot be well controlled by the fixed effects model, we further extend the basic model to an autoregressive panel model, such as

$$LCR_{i,t} = \alpha LCR_{i,t-1} +$$
$$\beta_1 LB_{i,t} + \beta_2 LB_{i,t-1} + \beta_3 LO_{i,t} + \beta_4 LO_{i,t-1} + \beta_5 LT_{i,t} + \beta_6 LT_{i,t-1} + \beta_7 S_{i,t} + \beta_8 S_{i,t-1} + \beta_9 L_{i,t} + \qquad (2)$$
$$\beta_{10} L_{i,t-1} + \beta_{11} LEQI_{i,t} + \beta_{12} LEQI_{i,t-1} + \tau_t + \delta_i + \mu_{i,t}.$$

As shown in the above equation, the current locational choice of the creative class is not only determined by the current values of independent variables, but also by their past values that represent the level of regional attractiveness in general. However, the normal demeaning process (i.e., the fixed effects estimation) will further create an association between $LCR_{i,t-1}$ and $\mu_{i,t}$ (i.e., dynamic bias), thus we used Blundell-Bond's [49] system GMM estimator to deliver more robust endogeneity corrected estimations.

Finally, Equation (2) was rewritten in an error correction form that yields the long run coefficients of each variable as:

$$\theta_1 = \frac{\beta_1 + \beta_2}{1 - \alpha}, \; \theta_2 = \frac{\beta_3 + \beta_4}{1 - \alpha}, \; \theta_3 = \frac{\beta_5 + \beta_6}{1 - \alpha}, \; \theta_4 = \frac{\beta_7 + \beta_8}{1 - \alpha}, \; \theta_5 = \frac{\beta_9 + \beta_{10}}{1 - \alpha}, \; \theta_6 = \frac{\beta_{11} + \beta_{12}}{1 - \alpha}. \qquad (3)$$

4. Results

4.1. Descriptive Analysis

Taking the year of 2010 as a reference, it is informative to outline the current spatial disparities regarding the core variables employed in this study. As shown in Figures 1–6, locational quotients are recalculated through dividing relative regional shares by the total share for all the target regions (the Europe average = 100), which allows a comparison of description among different regions and countries. It can be known from Figure 1 that western and northern European counties generally have more employees in the education and social care systems as compared with the eastern European countries like Hungary or the Czech Republic. In particular, the UK, Sweden, Germany and Finland provide high levels of social welfare. A similar finding is identified in several areas in France, while the pattern cannot be found in regions in Spain or Portugal. This description shows that utilizing more public resources is not necessarily conducive to a clear advantage in metropolitan areas. It appears that in the most populated and developed district in Île de France, France, the share of workers in the sector of social care and education is lower than the European average. Similarly, this pattern is captured in Greater London and some other regions in the UK, for example in South East England and South West England.
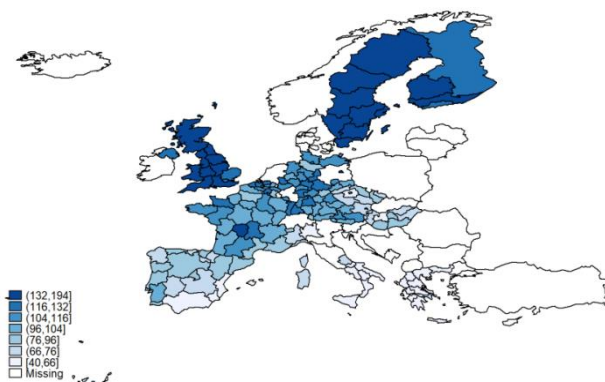

Figure 1. The Social Provision Level at the Regional level in Europe in 2010.
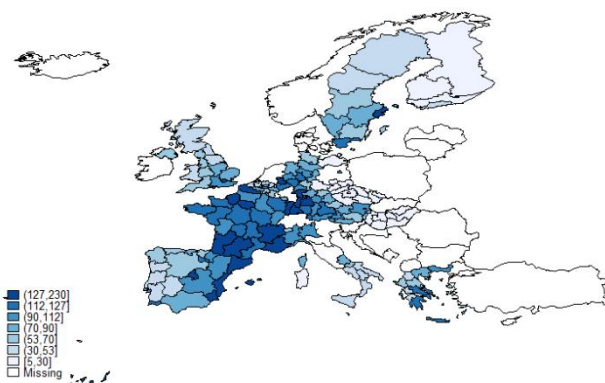

Figure 2. The Migrant Workers Distribution at the Regional Level in Europe in 2010.

Using the share of migrants or foreign-born workers, the study is slightly different from Florida's in defining the concept of openness. As shown in Figure 2, the spatial distribution of the migrant workers is completely different from those in social provision sectors. Foreign-born employees prefer to settle in regions of France and Spain, where the relative percentages of migrant workers are generally higher. Moreover, it appears that foreign-born workers also aggregate around metropolises like Greater London, Paris, Stockholm and Madrid. The distribution of bohemians is shown in Figure 3. As Florida argued, art workers are the bohemians who are more highly attracted by a good people climate. Therefore,

their presence can be interpreted as a sign of regional attractiveness. It indicates that the bohemians are somewhat similar to the migrant workers in terms of distribution. Interestingly, in the UK, Finland, Sweden and Germany, bohemians account fora much larger proportion of population and are distributed evenly. As for the remaining regions, such pattern is less obvious, because only a minority of them is highly populated by bohemians; and in the case of Eastern Europe, the agglomeration of bohemians is rarely observed, accounting for only one third of the European average.

Particularly, the agglomeration of bohemians seems straightforward in metropolitan areas. For instance, the Greater London is one of the most bohemian populated region, followed by other urban areas such as Stockholm, Île de France and Berlin. Therefore, this pattern strongly supports the favorable role of the metropolitan areas as suggested by Florida [50].
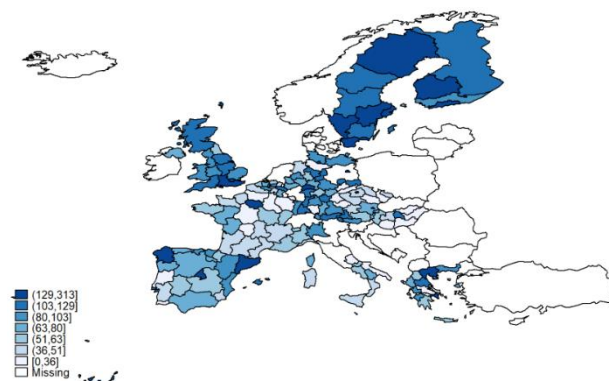
Figure 3. The Bohemian Population Distribution at the Regional Level in Europe in 2010.
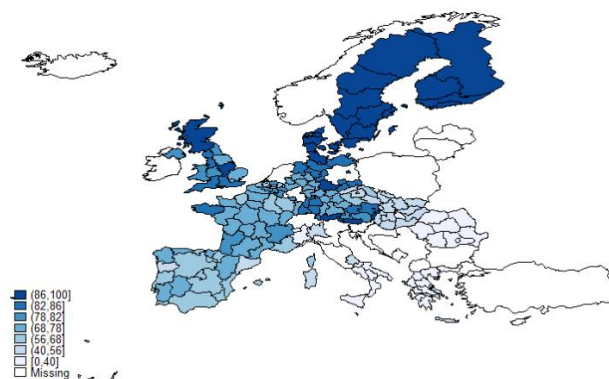
Figure 4. The Political Institutions Quality at the Regional Level in Europe in 2010.

Next, the spatial pattern of the local government performance is discussed in Figure 4. The findings show that the highest scores are observed in the Nordic countries including Sweden and Finland, and in some regions of Western Europe like Rég. Bruxelles-Cap.-Brussels Hfdst. Gewest in Belgium, Thüringen in Germany and the East Midlands in the UK, the high scores are also evident. In comparison, the EQI is low in most areas of France, Spain, Portugal and Greece and is the lowest in the Eastern European countries. Interestingly, the correlation between the quality of political institutions and the economic scale is not always positive, since the scores are not high in some metropolitan regions that are particularly attractive to bohemians or migrant employees, such as Greater London and Île de France.

Unlike for the national accounts, the EU LFS dataset does not have sufficient data regarding some occupations such as university teachers, so in some areas, data for a particular year is missing. However, it is still possible to plot a reasonable distribution pattern according to the available data, as shown in Figure 5. University teachers account for a high proportion of total employment in the UK (especially in England) as well as several areas in France, Spain and Sweden. Finally, as can be seen from Figure 6, the level of creative workers in the UK and Nordic countries is generally high, yet the

level in many other regions of Italy, Spain and Portugal and in the most countries of Eastern Europe is quite low.

Figure 5. The University Teachers Distribution at the Regional Level in Europe in 2010.

Figure 6. The Creative Workers Distribution at the Regional Level in Europe in 2010.

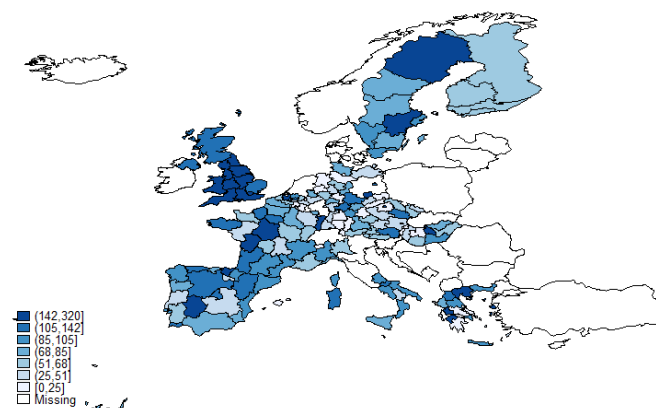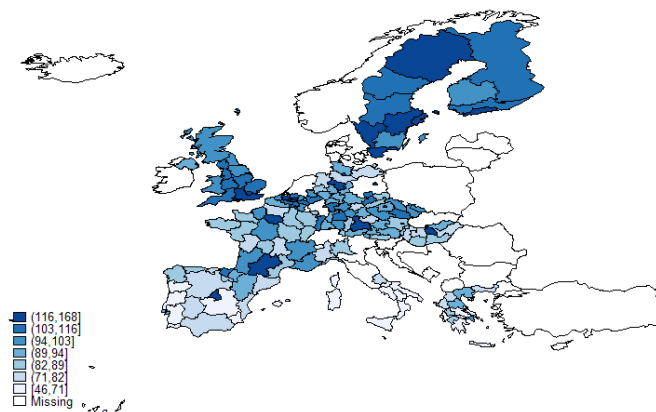In conclusion, the findings of this section, to a certain extent, support Florida's advocacies, especially in the European metropolitan area such as Greater London, Paris and Berlin. Here, a higher density of the creative class co-exists with a higher level of openness, tolerance and a better education quality (i.e., universities). Nevertheless, the trend is less pronounced for the smaller regions. More importantly, there is no clear relationship between the quality of the political institution and the density of the creative class in general.

4.2. Basic Results

The log-transformation is useful for improving the interpretability of our data patterns. It can be known from Table 1 that the value of the locational quotient of the creative class is between 5.06 and 3.65, with a standard deviation of 0.17. Some of the independent variables show greater changes—the locational quotient of bohemians ranging from 5.92 to 1.37, for instance.

In addition, as shown in Tables 2 and 3, the model employed in this study is less likely to suffer from the multicollinearity problem because the correlations among the independent variables are mostly small, and the diagnostic test shows that the VIF scores for all variables are below five. More specifically, the correlation between the bohemians variable and openness is merely 0.17 and that between the bohemians variable and university teachers is 0.27. It is worth mentioning that the significantly positive relationship between the EQI index and social provision largely reveals the accuracy of the measure of local government performance [48], as local residents' evaluation of social infrastructure quality is one sub-components of the EQI.

Table 1. Statistical Description of Variables.

Variable	Mean Value	Maximum Value	Minimum Value	Standard Deviation
The creative class (CR)	4.525	5.055	3.654	0.165
Creative graduates (CG)	4.518	5.363	3.299	0.219
Creative non − graduates (CNG)	4.530	5.133	3.299	0.186
The creative core (CC)	4.555	5.259	3.449	0.212
Creative professionals (CP)	4.508	5.109	3.475	0.190
Bohemians (LB)	4.281	5.916	1.368	0.551
Openness (LO)	4.369	6.056	1.778	0.484
University (LT)	4.396	6.309	1.353	0.604
Social provision (S)	−2.853	−0.768	−4.803	0.422
Government performance (GP)	−2.364	−1.191	−3.294	0.364
Interactive term LEQI	−9.642	−3.581	−14.877	2.014

Notes: all variables used in the paper are processed by logarithm.

Table 2. Pairwise Correlation Matrix.

	CR	LB	LO	LT	S
LB	0.541 ***	1			
	(0.000)				
LO	0.197 ***	0.166 ***	1		
	(0.005)	(0.000)			
LT	0.382 ***	0.270 ***	0.0125	1	
	(0.000)	(0.001)	(0.886)		
S	0.323 ***	0.162 ***	−0.0199	0.237 **	1
	(0.000)	(0.279)	(0.817)	(0.025)	
EQI	0.152 *	0.061	0.0716	0.048	0.691 ***
	(0.052)	(0.442)	(0.404)	(0.557)	(0.000)

Note: the values in parentheses are p-values, * denotes $p < 0.10$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table 3. Diagnostic Test for Multi-collinearity.

Variable	VIF Scores	1/VIF Scores
LB	1.43	0.69
LO	1.11	0.89
LT	1.11	0.89
S	1.43	0.69
EQI	1.38	0.72

4.3. Fixed Effects Estimation

Many of the regional specific effects are unobservable and may be related to independent variables. For this reason, the coefficient estimates are determined by endogeneity, an often ignored third factor that determines both the independent variables and the dependent ones. Therefore, a fixed effects model is employed to control unobservable time-invariant factors such as reputation, historical background and geographic environment. The findings in Table 4 suggest that the effects of tolerant climate, university location and the quality of social provision are all positively significant, although the coefficient size of the social provision variable is the biggest one at around 0.2 (The large coefficient size does not mean that the effect of a variable is larger than others included in the analysis, but reflects the differences in variable measurement). In comparison, the effect of openness is insignificant, and so is the measure of political institutions. We further add both country and time dummies to the fixed effects model. As shown in the second column, the effect of the university location decreases. In addition, the larger size of coefficients can also be observed in the bohemian climate, the quality of social

provision as well as local government performance, which further confirms that the effects of openness and local government are not observable with this model specification. Therefore, it can be concluded that the bohemian climate exerts a great impact on the locational preference of the creative class. The location of universities also appears to be important. This finding may suggest that creative workers and educated workers have similar preferences in general. It should not be ignored that the creative class partly overlaps with human capital factors because a large proportion of creative workers hold a university degree. Despite this, it is impossible to tell whether these creative workers with university degrees are influenced more by creativity or education, as to a certain extent, these groups behave similarly.

Table 4. Fixed Effects Specification.

	(I) Region FE	(II) Region FE
LB	0.023 ***	0.026 ***
	(0.0039)	(0.0041)
LO	0.006	0.008
	(0.0073)	(0.0075)
LT	0.016 ***	0.014 ***
	(0.0033)	(0.0035)
S	0.200 ***	0.215 ***
	(0.0104)	(0.0107)
L	0.090 ***	0.114 ***
	(0.0177)	(0.0177)
L ∗ EQ I	0.003	0.003
	(0.0033)	(0.0033)
Dummy variables	Time trends	Country − specific time trends
Constant	5.158 ***	5.246 ***
	(0.0619)	(0.0712)
Within R^2	0.23	0.29
N. of cases	2191	2191

Notes: 1. LQ denotes the locational quotient indicator. 2. * denotes $p < 0.10$, ** denotes $p < 0.05$, *** denotes $p < 0.01$, the values in parenthesis are standard errors.

Whether the peripheral areas (with employment below 300,000) and metropolitan areas (with employment over 720,000 (The boundaries between different sizes of regions are based on the value of total average labor force within the sample period in the 30th, 60th and 90th percentiles) are affected differently by those socio-economic factors mentioned above is an interesting research question. The estimated models based on different city sizes are shown in Table 5. Though all the samples cannot be grouped into subcategories of metropolitan and peripheral regions owing to data limitations, it is still allowable to assume that regions with larger workforces can be defined as more socially and economically influential; this is particularly evident in Europe. First, only the effect of time trend is added to the regressions, as the findings in the first column of each category show that the coefficients among the three categories of regions are different. The density of bohemian population (i.e., bohemians) is important in explaining the distribution of creative workers in large regions, yet is insignificant in small areas. Similarly, the effect of the density of foreign born workers (i.e., openness) is small in non-metropolitan areas (i.e., medium and small sized regions), but is significantly positive in large-sized regions, at 0.096. As for social provision, its influences in all the three kinds of regions are strong, with the most significant impact in large-sized regions. The impact of universities is significant only in small-sized regions. Also, in small areas, high-quality political institutions seem to have stronger appeals to creative workers, as the coefficients of L and its interactive term with EQI in large regions are only 0.049 and 0.007, respectively, and there is an increase to 0.087 and 0.015 in small-sized regions. In comparison, midsized regions seem to be somewhere in between, which may be plausible, and the model generally has the lowest level of fitness, with an R^2 value of only 0.15.

The model specification is then expanded to allow for country-specific time trends (i.e., the interaction between time dummies and country dummies). Here, the findings suggest a considerable difference compared to the estimation with the time trend mentioned above. Table 6 (the second column in each category) shows that the effect of bohemians becomes significant in small regions. Meanwhile, the coefficient size of social provision and the elasticity of universities increase slightly, which are 0.172 and 0.036, respectively, though the explanatory power of openness is still not significant. In contrast, the measure of local governments has changed obviously, and its independent effect is no longer observed, though the interactive term L*EQI is still significant. A similar pattern is evident in large regions as well. In comparison, the sign and size of the rest of independent variables only slightly changed. The only exception is the measure of local government performance, as the coefficient size of L increased to 0.101 and the effect of EQI is no longer significant in large sized regions.

In summary, although some coefficients in the two specifications are inconsistent, the findings are robust. This may be a result of the lack of degrees of freedom; for instance, there are only 588 observations for small-sized regions, yet there are over 50 dummies. It seems that Florida's argument is the most effective in large regions (metropolitan areas) where creative class is attracted by a people climate that can be measured by its tolerance and openness, as compared with small ones, where the creative workers seem to cling to traditional ways of life, and are particularly concerned about the quality of services provided by local governments.

4.4. The Dynamic GMM Estimation

In this section, we aim to make clear the locational choices of the creative class from a dynamic perspective. Using the system GMM, we now focus on a model specification that further allows dynamic adjustment. We assume that the flow of the creative class can be self-determined [51] in the sense that new creative workers prefer to stick together with their own kind who have already been to a specific place. This locational choice links the current distribution of creative workers to its past realization. Considering the limited simple size, only 1 period lagged dependent and independent variables are incorporated into the regression.

In Table 6, column I, the pooled OLS model shows that the distribution of the creative class has a significant correlation with its past realization, and the present coefficients of all other independent variables are positively significant too, with the exception of openness and local government performance. The OLS estimator would theoretically cause an upward bias, which is contrary to the downward bias caused by a fixed effects estimator [52]. Thus, if the coefficient of Y_{t-1} from a GMM estimation can be fitted well in this range (i.e., laying between upward and downward biased values of Y_{t-1}), then the model fitness can be deemed as being high [53].

It can be seen from the second column that including regional dummies does reduce the coefficient sizes of the 1 period lagged dependent variable and all independent variables. However, the demeaning process is unable to eradicate the endogeneity issue further created by dynamic bias, thus we introduce the difference and levels GMM estimator proposed by Anderson-Hsiao [54], which has been refined by Arellano and Bond's later work [55]. The basic principle behind this technique is to measure differenced endogenous variables according to their past lagged levels. The results show that the coefficient of lagged dependent variable is small, at 0.478.

Next, we use Arellano and Bond's difference GMM estimator, yet its performance is even worse, as shown in column IV. Here, the coefficient of Y_{t-1} is only 0.237 and other coefficients decrease as well, indicating incredibly small elasticity. This result can be considered to be normal, given that this approach based on differencing transformation may not have a good performance if the change of dependent variable is a random-walk process. So finally, the Blundell-Bond system GMM estimator is proposed. As the system GMM model involves level equations, that is, the fixed effects have not been eliminated, the possible endogeneity for regressors should be tested. Beyond the dynamic panel bias caused by Y_{t-1}, it is also very likely that the other independent variables are not strictly exogenous. Therefore, based on Baum et al.'s [56] method, an endogeneity test is further employed. The findings

in Table 7 shows that the C-statistic for the variables of bohemians and social provision cannot be regarded as strictly exogenous, with the Chi-square values being 12.9 and 5.7, respectively. Given this, they are also instrumented.

As shown in the last column, the coefficient of Y_{t-1}, is 0.824, within the credible range of 0.451-0.847; thus, the Blundell-Bond system GMM estimator appears to be in good agreement with the expectations of this paper. The long-run coefficient of bohemians is $(0.031 − 0.020)/(1 − 0.824) = 0.063$, which has a smaller influence on the consumer preferences creative workers than the location of universities $0.022/(1 − 0.824) = 0.125$. In this regression, the level of openness is insignificant as well, but the long-run effect of social provision is huge, being $(0.202 − 0.181)/(1 − 0.824) = 0.119$, yet it is smaller than the fixed affects estimator predicted (0.215). Finally, both the local government performance and its interaction with the EQI have a significant and positive long-run effect in general, which is consistent with the fixed affects model predicted.

In conclusion, the comparison between different model specifications indicates that the Blundell-Bond system GMM estimator has a better analysis of causality. It is therefore reasonable to conclude that the distribution of bohemians has a certain impact on creative workers' location preferences. Similarly, the location of universities as well as the amount of social provision also plays an important role. It is worth mentioning that the dynamic GMM estimation can be also applied to the test regarding regional hierarchy (i.e., small/medium/large sized region groups). However, due to data constraints, the much smaller size of region subgroups cannot sufficiently support the analysis of system GMM, thus the system GMM estimator is not considered in this context. We believe our fixed effects estimation has provided important materials for understanding the complexity of locational choices of creative workers.

4.5. Exploring the Differential Preferences of Creative Workers

Finally, we attempt to test the empirical model through different creative sub-categories. As mentioned above, the first component is defined as the creative core employees who provide creative ideas that can be transformed to concrete economic outcomes [42] and whose preferences may differ as well, compared to creative professionals [40,41]. The second component is creative graduates, which was proposed by Maroccu and Paci [57] by distinguishing creative workers with a university degree from those who do not have one.

Due to limited space, the results based on the fixed effects model are not presented, as they are similar to the dynamic GMM estimation results. It is interesting to see (in Table 8) that creative graduates and the creative core have quite different preferences from the entire creative class. Again, the significant effect of a bohemian or open climate is not observed at the aggregate level. The quality of local government, however, has a greater impact on the creative core, as its long-run coefficient is 0.007, much bigger than those for the other groups. The positive effect of university location is also evident, showing coefficients of 0.018 and 0.021, respectively. In comparison, the pattern is different for creative workers without a degree or creative professionals. As shown in Columns 3 and 4, the positive effects of the bohemian and openness variables are evident, but university and social provision do not seem to matter. This finding makes sense because these subgroups synthesize knowledge rather than create it and therefore have a preference for people over climate.

Table 5. The Regression Results of the Fixed Effects Model.

	Small−Size Regions		Midsized Regions		Large−Sized Regions	
LB	0.009	0.023 *	0.010 **	0.012 **	0.057 ***	0.047 ***
	(0.009)	(0.0012)	(0.0050)	(0.0052)	(0.0086)	(0.0090)
LO	−0.019	−0.014	0.002	0.002	0.096 ***	0.080 ***
	(0.0194)	(0.0174)	(0.0106)	(0.0119)	(0.0164)	(0.0174)
LT	0.033 ***	0.036 ***	0.003	0.003	−0.001	−0.001
	(0.0061)	(0.0061)	(0.0042)	(0.0047)	(0.0076)	(0.0080)
S	0.145 ***	0.172 ***	0.131 ***	0.134 ***	0.349 ***	0.455 ***
	(0.0499)	(0.0357)	(0.0142)	(0.0162)	(0.0241)	(0.0232)
L	0.087 **	0.095	0.090 **	0.091 **	0.049 **	0.101 **
	(0.0489)	(0.0608)	(0.0264)	(0.0333)	(0.0350)	(0.0350)
L * EQI	0.015 **	0.013 **	−0.007	−0.007	0.007*	0.005
	(0.0068)	(0.0070)	(0.0051)	(0.0058)	(0.0041)	(0.0041)
Constant	5.104 ***	5.117 ***	4.971 ***	4.996 ***	5.108 ***	5.596 ***
	(0.2027)	(0.1881)	(0.0941)	(0.121)	(0.131)	(0.335)
Dummies	Time Trends	Country-specific time trends	Time Trends	Country-specific time trends	Time Trends	Country-specific time trends
R^2	0.24	0.43	0.15	0.24	0.50	0.59
N. of cases	588	588	868	868	735	735

Notes: 1. Small, medium and large regions refer to those with employment of below 325,000, between 325,000 and 770,000 and over 770,000 respectively. 2. * denotes $p < 0.10$, ** denotes $p < 0.05$, *** denotes $p < 0.01$, the values in parenthesis are standard errors.

Table 6. Dynamic GMM estimations.

	(I) Pooled-OLS	(II) FE	(III) GMM (Anderson-Hsiao Difference and Levels, 1981)	(IV) GMM (Arellano-Bond Difference, 1991)	(V) GMM (Blundell-Bond System, 1998)
CR_{t-1}	0.847 ***	0.451 ***	0.478 ***	0.237 ***	0.824 **
	(0.0117)	(0.0210)	(0.1302)	(0.0109)	(0.0466)
B_t	0.033 ***	0.025 ***	0.024 ***	0.007	0.031 ***
	(0.0035)	(0.0037)	(0.0047)	(0.0146)	(0.0110)
B_{t-1}	−0.015 **	−0.013 **	−0.021 ***	−0.009	−0.020 **
	(0.0035)	(0.0037)	(0.0058)	(0.0074)	(0.0008)
O_t	−0.002	−0.008	0.006	0.001	0.009
	(0.0079)	(0.0084)	(0.0117)	(0.0179)	(0.0167)
O_{t-1}	0.028	−0.000	−0.003	−0.005	−0.002
	(0.0079)	(0.0081)	(0.0107)	(0.0134)	(0.0149)
T_t	0.022 ***	0.016 ***	0.019 ***	0.022 ***	0.022 ***
	(0.031)	(0.032)	(0.0038)	(0.0058)	(0.0048)
T_{t-1}	−0.011 ***	−0.010 ***	−0.010 *	−0.003	−0.009
	(0.031)	(0.033)	(0.0049)	(0.0053)	(0.0060)
S_t	0.193 ***	0.192 ***	0.202 ***	0.118	0.202 ***
	(0.0127)	(0.0129)	(0.0159)	(0.1034)	(0.0664)
S_{t-1}	−0.181 ***	−0.078 ***	−0.0693 ***	0.039	−0.181 ***
	(0.0122)	(0.0129)	(0.0310)	(0.0343)	(0.0602)
L_t	−0.039	0.071 ***	0.073 ***	0.097	0.065
	(0.0576)	(0.0180)	(0.0219)	(0.0691)	(0.0533)
L_{t-1}	0.010	−0.021	0.001 ***	0.152 ***	−0.030
	(0.0556)	(0.0180)	(0.0238)	(0.0556)	(0.0481)
$LEQI_t$	0.025 **	0.002	0.004	−0.001	0.003
	(0.0133)	(0.0029)	(0.0031)	(0.0065)	(0.0043)
$LEQI_{t-1}$	−0.017	0.002	−0.003	−0.011 **	−0.003
	(0.0130)	(0.0030)	(0.0032)	(0.0046)	(0.0036)
Constant	0.543 ***	2.968 ***	−0.002 ***	n/a	0.729 ***
	(01124)	(0.1284)	(0.0027)		(0.194)
Region Dummies	No	Yes	No	No	No
Year Dummies	No	Yes	Yes	Yes	Yes
N. of cases	1956	1956	1752	1752	1956
R^2	0.83	0.87	n/a	n/a	n/a
AR(1)				(Z) − 5.14/(P)0.000	(Z) − 6.20/(P)0.000
AR(2)				(Z)0.90/(P)0.368	(Z)0.95/(P) 0.342

Note: variables in model III are processed by difference, * denotes $p < 0.10$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table 7. The Results of Endogeneity Test (b).

Variables	Chi-Square Values of C Statistic
$B_t\ B_{t-1}$	12.852 ***
$S_t\ S_{t-1}$	5.668 ***
$O_t\ O_{t-1}$	0.418
$L_t\ L_{t-1}$	2.007
$T_t\ T_{t-1}$	2.238
$L_t * LEQI_t, L_{t-1} * LEQI_{t-1}$	0.012

Note: * denotes $p < 0.10$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table 8. The Differential Preferences of Creative Workers.

	Creative Graduates	Creative Non-Graduates	The Creative Core	Creative Professionals
CR_{t-1}	0.767 ***	0.462 **	0.693 ***	0.699 ***
	(0.0546)	(0.0507)	(0.0493)	(0.0554)
B_{t-1}	0.000	−0.002	−0.001	0.002
	(0.0102)	(0.0136)	(0.0094)	(0.0093)
T_{t-1}	0.002	0.005	0.007	0.002
	(0.0079)	(0.0071)	(0.0068)	(0.0065)
O_{t-1}	−0.004	0.050 **	−0.005	0.024 *
	(0.0213)	(0.0225)	(0.0257)	(0.0141)
L_{t-1}	−0.054	−0.023	0.007	−0.050 **
	(0.0385)	(0.0330)	(0.0374)	(0.0276)
S_{t-1}	−0.269 ***	0.003	−0.163 ***	−0.044
	(0.0544)	(0.1024)	(0.0627)	(0.0746)
$LEQI_{t-1}$	−0.007	−0.003	−0.011 **	0.008
	(0.0067)	(0.0056)	(0.0054)	(0.0049)
B_t	0.019	0.031 ***	0.001	0.024 **
	(0.0158)	(0.0189)	(0.0164)	(0.0113)
T_t	0.018 ***	0.005	0.021 **	0.012 **
	(0.0066)	(0.0075)	(0.0074)	(0.0051)
O_t	0.006	−0.014	−0.020	−0.016
	(0.0239)	(0.0242)	(0.0286)	(0.0159)
L_t	0.106 ***	0.034	0.078 **	0.045
	(0.0387)	(0.0416)	(0.0364)	(0.0325)
S_t	0.277 ***	0.052	0.198 ***	0.054
	(0.0594)	(0.1362)	(0.0600)	(0.0808)
$LEQI_t$	0.001	−0.001	0.013 **	−0.001
	(0.0060)	(0.0066)	(0.0056)	(0.0056)
Constant	0.953 ***	2.220 ***	1.515 ***	1.393 ***
	(0.276)	(0.2700)	(0.2643)	(0.2449)
N. of cases	1955	1956	1956	1956
AR(1)	(Z) − 7.38/(P)0.000	(Z) − 4.18/(P)0.001	(Z) − 5.28/(P)0.000	(Z) − 5.28/(P)0.000
AR(2)	(Z)0.64/(P)0.523	(Z) − 0.08/(P) 0.939	(Z)0.97/(P) 0.331	(Z)0.97/(P) 0.331

Notes: Sargan and Hansen tests were omitted due to the limitation of space. * denotes $p < 0.10$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

5. Discussion and Conclusions

Based on various model specifications, this paper aims to explore the complexity of locational choices of the creative class in the context of Europe. The purpose of Hypothesis 1 is to verify whether the findings of the present paper agree with those from previous studies, as the effect of the people climate is assumed to be significant in shaping creative labor flows in Europe and such an effect varies across regions of different group sizes. Overall, the propositions of Florida are not totally rejected. The findings based on multiple models suggest that the parameters related to the creative class thesis

have a great impact on the locational choices of creative workers in most European regions. Thus, the requirement to enhance "artificial" amenities is still worthy of policy attention.

The theory of the creative class, however, still needs modification. Based on Hypothesis 2, some changes have been made to the existing creativity parameters and an overview of alternative development paths has been provided. It seems straightforward that developing rich amenities, including high quality education and social welfare systems, or cultural diversity has to be associated with the foundation of social development [57]. In addition, it seems that there are more creative activities in regions with the best EQI performances than in areas with the worst performances. The theory behind this is that a country is more likely to make major socioeconomic progress if it has a good local governments [58] (p. 135). The conclusion here is new to most of the previous studies regarding the role of political institution in a socio-economic system (e.g., Reference [59]). However, we further bridge the gap between creative economy and institutional economy research; a local government with a high level of effectiveness, impartiality and honesty is likely to help the creative economy thrive in certain circumstances, i.e., for small-sized regions.

However, given the different urban realities, those general policy suggestions may be insufficient for the understanding the creative class's actual role. Moreover, a regional hierarchy makes it more difficult to understand the dynamics of creative urban regions. How do non-metropolitan areas develop together with the surrounding megacities? Here, the findings suggest that small-sized urban regions still have unique advantages. Europe's small regions seem to have succeeded in helping the creative class identify themselves, which however does not involve tolerance and openness as Florida originally suggested, but values and social responsibility. In addition, small regions also have the potential to develop into centers of innovation [60], as the finding implies that the co-existence of creative workers, universities and various research institutions is particularly evident in small European regions. Unfortunately, the group of midsized urban regions is an exception, as the spatial distribution of the creative class does not appear to be determined by the factors advocated by either the creative class thesis or the concept of social sustainability. As a result, it is hard to draw a clear conclusion about the creative class's exclusive preferences in midsized European areas. In other words, it seems that the creative class thesis is feasible only under certain circumstances and it may be realistic that conventional factors such as income, job opportunities and geographical advantage can still determine the creative class's locational preferences.

Finally, Hypothesis 3 has been confirmed. The preferences of different creative occupations are likely to lie between two polarized dimensions of values: survival values and self-expression values [61]. Survival values emphasize the importance of economics and social security, while self-expression values are attached with cultural diversity, tolerance, environmental protection, human rights, etc. Our result suggests that for different groups of creative workers, their consumer preferences are not the same in a place, which is consistent with a number of previous studies such as Asheim et al. [41] and Krätke [42]. Here, even though the analysis does not directly measure the impact of university degree together with the occupational division, it appears that creative workers with a higher level of education attainments (e.g., creative graduates and the creative core) share some common values, as do those with a lower educational level such as creative non-graduates and creative professionals. This indicates that a certain proportion of creative workers may not prefer to only have the cultural preferences that Florida suggested they would.

6. Implications and Limitations

The creative class thesis has focused on how the concept of "cultural consumption" can be used to attract specific human capital, which in turn drives sustainable socio-economic development. In comparison, Europe is undergoing significant socio-political changes that have been much more dramatic since the 2000s. Now the European Union has to deal with many old and new challenges such as labor market rigidity, single market fracturing, rapid immigration, Brexit and dealing with Russia and its own expansion. When the socio-political foundations for spreading the hedonistic

notion of cultural consumption is weakening, policy makers have to acknowledge why creativity engendering theories such as the creative class thesis are conceptually problematic in the current context and how to develop a language beyond "creativity" that properly connects human capital with creative economic milieus. Therefore, our findings have a range of policy implications that may contribute to the improvement of the creative class theory and to further strength its connection with the concept of sustainable growth from three perspectives.

Frist, it appears that the locational choices of the creative class are complicated, thus there is a need to focus on coordinating the efforts in the joint promotion of people climate with fundamental socio-economic development. For instance, the EQI also shows how creative people think about the local community. The positive correlation between the spatial distribution of the creative class and the performance of local government empirically confirms that the development of the creative economy should stick firmly to the essential values of a society: "democratic values and social solidarity" [16]. The creative class not only has a strong preference for individuality and self-expression, but is also reluctant to comply with traditional norms or institutional instructions [10] (p. 56). Partially focusing on building up selected 'cultural 'amenities may not deliver expected policy outcomes.

Second, it is believed that Florida's one-size-fits-all solution has been proven to be implausible. It is believed that the quality of local government in large urban areas is lower than that of small ones in Europe. Large regions with a bigger economic scale and more complex social networks have a better ability to cope with socioeconomic challenges, but on the downside, such an advantage is inevitably accompanied by inherent disadvantages, such as administrative inefficiency, social inequalities and corruption. While these patterns determine the level of social sustainability, regions of different sizes all have a chance to grow into creative areas if local policy makers could properly link the creative class's preferences to their unique strengths.

In this sense, there is urgent need for both scholars and policy practitioners to rethink how to define the concept of creativity properly (Mould, 2018) [62]. Creativity, no matter whether it relates to the outstanding mental capacity for a few super talented people or economic values embodied in concrete social contexts, is inevitably an essential component of the knowledge economy, but Florida, along with other urban neoliberals (e.g., Landry, 2000) [63], only focused on the endless competition of "creative advantage", and using the concept of cultural consumption such as "tolerance" to highlight the uniqueness of a few privilege groups that has the most important technical skills and knowledge to economic development. In comparison, the power of cultural and social skills from a large proportion of undervalued working groups are overlooked, and it seems that the development of the creative economy deviated from its original goals on social and economic sustainability including reciprocity, cooperation, harmony, social inclusion or income redistribution, and is becoming simple sensationalization and a carnival. Along this line of thought, the last policy implication is that the relationship across regions in Europe, and very likely in other nations, does not have to be competitive; instead, regions of different sizes should be socially and geographically networked, in order to make their respective advantages complementary to each other. In addition to focusing on obtaining unique advantages from a "non-cultural" perspective, exploring the diversity of the creative class' preferences would be also an icing on the cake. Although openness and tolerance are quite important, the creative class appears to have different priorities when evaluating places with different socioeconomic natures. Policy makers should therefore clearly understand the preferences of certain groups with creative talents that are urgently needed by local economies and re-conceive specific strategies to attract them.

Admittedly, data constraints in the EU LFS dataset impede us from precisely measuring the differences between creative workers by regions and further by working groups, and the methods we employed in this study to capture the essential and abstract aspects of the creative class theory and the concept of social sustainability may be subjective. Moreover, we acknowledge that the analysis of this paper is based on European data, thus the findings maybe not applicable to other nations. Finally, the census data we accessed is limited to the period 1995–2010, as there is an inconsistence in terms of the definition of occupation codes (i.e., ISCO-88 vs. ISCO-00) between LFS data waves around

2010. However, it is feasible to revisit our data sample for 2010–2020 and to see whether the dramatic socio-political changes such as Brexit during the past decade exert significant impacts on the formation of creative talent groups. These issues have to be solved through further research.

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References

1. Weber, A. *Über den Standort der Industrien, Teil I: Reine Theorie des Standorts*; Mohr, J.C.B., Ed.; J.C.B. Mohr Paul Siebeck: Tübingen, Germany, 1909.
2. Marshall, A. *Principles of Economics*; Macmillan and Co. Ltd.: London, UK, 1930.
3. Vernon, R. International investment and international trade in the product cycle. *Q. J. Econ.* **1966**, *80*, 190–207. [CrossRef]
4. Colglazier, W. Sustainable development agenda: 2030. *Science* **2015**, *349*, 1048–1050. [CrossRef] [PubMed]
5. Becker, G. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*; University of Chicago Press: Chicago, IL, USA, 1964.
6. Goodland, R. Sustainability: Human, social, economic and environmental. *Encycl. Glob. Environ. Chang.* **2002**, *5*, 481–491.
7. Glaeser, E.L. Entrepreneurship and the City. NBER Working Paper. Available online: http://scholar.harvard.edu/files/glaeser/files/urban_economics_and_entrepreneurship.pdf (accessed on 15 February 2020).
8. Acemoglu, D.; Dell, D. Productivity differences between and within countries. *Am. Econ. J. Macroecon.* **2010**, *2*, 169–188. [CrossRef]
9. Florida, R. *The Rise of the Creative Class*; Basic Books: New York, NY, USA, 2002.
10. Florida, R. *The Rise of the Creative Class*, 10th ed.; Basic Books: New York, NY, USA, 2013.
11. Rodrigues, M.; Franco, M. Composite Index to Measure Cities' Creative Performance: An Empirical Study in the Portuguese Context. *Sustainability* **2019**, *11*, 774. [CrossRef]
12. Glaeser, E.L. Review of Richard Florida's the rise of the creative class. *Reg. Sci. Urban Econ.* **2005**, *35*, 593–596. [CrossRef]
13. Rausch, S.; Negrey, C. Does the creative engine run? a consideration of effect of creative class on economic strength and growth. *J. Urban Aff.* **2006**, *28*, 473–489. [CrossRef]
14. Pratt, A.C. Creative cities: The cultural industries and the creative class. *Geogr. Ann. Ser. B-Hum. Geogr.* **2008**, *90*, 107–117. [CrossRef]
15. Chapple, K.; Markusen, A.; Schrock, G. Rejoinder: High-tech rankings, specialization, and relationship to growth. *Econ. Dev. Q.* **2004**, *18*, 44–49. [CrossRef]
16. Scott, A.J. Beyond the creative city: Cognitive-cultural capitalism and the new urbanism. *Reg. Stud.* **2014**, *48*, 565–578. [CrossRef]
17. Weeks, G.C. Labor Markets, Class Interests, and the Technology of Production. *J. Econ. Issues* **1980**, *14*, 553–566. [CrossRef]
18. Reese, L.; Faist, J.L.; Sands, G. Measuring the creative class: Do we know it when we see it? *J. Urban Aff.* **2010**, *32*, 345–366. [CrossRef]
19. Stam, E.; Jeroen, P.J.; Marlet, G. Creative industries in Netherland: Structure, development, innovativeness and effects on urban growth. *Geogr. Ann. Ser. B Hum. Geogr.* **2008**, *90*, 119–132. [CrossRef]
20. Storper, M.; Scott, A.J. Rethinking human capital, creativity and urban growth. *J. Econ. Geogr.* **2009**, *9*, 147–167. [CrossRef]

21. Martin-Brelot, H.; Grossetti, M.; Eckert, D.; Gritsai, O. The spatial mobility of the 'creative class': A European perspective. *Int. J. Urban Reg. Res.* **2010**, *34*, 854–870. [CrossRef]

22. Reese, L. Creative class of procreative class: Implications for local economic development policy. *Theor. Empir. Res. Urban Manag.* **2012**, *7*, 5–26.

23. Jair, D.A.F.; Farias, D.B.L. Celso Furtado: Culture and Creativity Matter. *J. Econ. Issues* **2016**, *50*, 444–451.

24. Ström, P.; Nelson, R. Dynamic regional competitiveness in the creative economy: Can peripheral communities have a place? *Serv. Ind. J.* **2009**, *30*, 497–511. [CrossRef]

25. Lewis, N.M.; Donald, B. A new rubric for 'creative city' potential in canada's smaller cities. *Urban Stud.* **2010**, *47*, 29–54. [CrossRef]

26. Peck, J. The struggling with creative class. *Int. J. Urban Reg. Res.* **2005**, *29*, 740–770. [CrossRef]

27. Luger, J.D. When the creative class strikes back: State-led creativity and its discontents. *Geoforum* **2019**, *106*, 330–339. [CrossRef]

28. Jakob, D. Constructing the creative neighborhood: Hopes and limitations of creative city policies in Berlin. *City, Cult. Soc.* **2010**, *1*, 193–198. [CrossRef]

29. Marcuse, P. Review of the rise of the creative class by Richard Florida. *Urban Land* **2003**, *62*, 40–41.

30. Boschma, R.A.; Fritsch, M. Creative class and regional growth: Empirical evidence from seven European countries. *Econ. Geogr.* **2009**, *85*, 391–423. [CrossRef]

31. Gibson, C.; Kong, L. Cultural economy: A critical review. *Prog. Hum. Geogr.* **2005**, *29*, 541–561. [CrossRef]

32. Nelson, R. A cultural hinterland? searching for the creative class in the small Canadian City. In *The Small Cities book: On the Cultural Future of Small Cities*; Garrett-Petts, W.F., Ed.; New Star Books: Vancouver, BC, Canada, 2004; pp. 85–110.

33. Haisch, T.; Klopper, C. Location choices of the creative class: Does tolerance make a difference? *J. Urban Aff.* **2015**, *37*, 233–254. [CrossRef]

34. Kolenda, R.; Liu, C.Y. Are central cities more creative? The intrametropolitan geography of creative industries. *J. Urban Aff.* **2012**, *34*, 487–512. [CrossRef]

35. Rao, Y.; Dai, D. Creative class concentrations in shanghai, china: What is the role of neighbourhood social tolerance and life quality supportive conditions? *Soc. Indic. Res.* **2017**, *132*, 1237–1246. [CrossRef]

36. Wojan, T.R.; Lambert, D.M.; McGranahan, D.A. Emoting with their feet: Bohemian attraction to creative milieu. *J. Econ. Geogr.* **2007**, *7*, 711–736. [CrossRef]

37. Stolarick, K.; Florida, R. Creativity, connection and innovation: A study of linkages in the Montréal Region. *Environ. Plan.* **2006**, *38*, 1799–1817. [CrossRef]

38. Markusen, A. Urban development and the politics of a creative class: Evidence from the study of artists. *Environ. Plan.* **2006**, *38*, 1921–1940. [CrossRef]

39. Beckstead, D.; Brown, W.M.; Gellatly, G. The left brain of North American cities—scientists and engineers and urban growth. *Int. Reg. Sci. Rev.* **2008**, *31*, 304–338. [CrossRef]

40. Asheim, B.; Hansen, H.K. Knowledge bases, talents, and contexts: On the usefulness of the creative class approach in Sweden. *Econ. Geogr.* **2009**, *85*, 425–442. [CrossRef]

41. Asheim, B.T.; Coenen, L.; Moodysson, J.; Vang, J. Constructing knowledge-based regional advantage: Implications for regional innovation policy. *Int. J. Entrep. Innov. Manag.* **2007**, *7*, 140–153. [CrossRef]

42. Krätke, S. "Creative cities" and the rise of the dealer class: A critique of Richard Florida's approach to urban theory. *Int. J. Urban Reg. Res.* **2010**, *34*, 835–853. [CrossRef]

43. Mellander, C.; Stolarick, K.; Lobo, J. Distinguishing neighborhood and workplace network effects on individual income: Evidence from Sweden. *Reg. Stud.* **2017**, *51*, 1652–1664. [CrossRef]

44. Zhao, K.; O'Mahony, M.; Qamar, A. Bridging the gap in creative economy and ICT research: A regional analysis in Europe. *Appl. Econ.* **2020**, in press. [CrossRef]

45. Chin, T. Location choice of new business establishments: Understanding the local context and neighborhood conditions in the united states. *Sustainability* **2020**, *12*, 501. [CrossRef]

46. Lorenzen, M.; Andersen, K. Different Creative Cities: Exploring Danish Data to Adopt the Creative Class Argument to Small Welfare Economies. *Creat. Ind. J.* **2012**, *42*, 123–136. [CrossRef]

47. Anderson, K.V.; Hansen, H.K.; Isakson, A.; Raunio, M. Nordic regions in the creative class debate: Putting creative class thesis to a test. *Ind. Innov.* **2010**, *17*, 215–240. [CrossRef]

48. Charron, N.; Dijkstra, L.; Lapuente, V. Regional governance matters: Quality of government within European Union member states. *Reg. Stud.* **2014**, *48*, 68–90. [CrossRef]

49. Blundell, R.; Bond, S. Initial conditions and moment restrictions in dynamic panel data models. *J. Econom.* **1998**, *87*, 11–143. [CrossRef]

50. Florida, R.; Mellander, C.; Stolarick, K. Inside the black box of regional development—human capital, the creative class and tolerance. *J. Econ. Geogr.* **2008**, *8*, 615–649. [CrossRef]

51. Möller, J.; Tubadji, A. *The Creative Class, Bohemians an Local Labor Market Performance–A Micro-Data Panel Study for Germany 1975–2004*; Osteuropa-Institut: Regensburg, Germany, 2008.

52. Bond, S. *Dynamic Panel Data Models: A Guide to Micro Data Methods and Practice*; Working Paper 09/02; Institute for Fiscal Studies: London, UK, 2002.

53. Roodman, D. How to Do xtabond2: An Introduction to "Difference" and "System" GMM in Stata. *Stata J.* **2009**, *9*, 86–136. [CrossRef]

54. Anderson, T.W.; Hsiao, C. Formulation and estimation of dynamic models using panel data. *J. Econom.* **1981**, *18*, 47–82. [CrossRef]

55. Arellano, M.; Bond, S. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Rev. Econ. Stud.* **1991**, *58*, 277–297. [CrossRef]

56. Baum, C.F.; Schaffer, M.E.; Stillman, S. Enhanced routines for instrumental variables/GMM estimation and testing. *Stata J.* **2007**, *7*, 465–506. [CrossRef]

57. Marrocu, E.; Paci, R. Education or creativity: What matters most for economic performance? *Econ. Geogr.* **2012**, *88*, 369–401. [CrossRef]

58. Holmberg, S.; Rothstein, B.; Nasiritousi, N. Quality of government: What you get. *Annu. Rev. Political Sci.* **2009**, *12*, 135–161. [CrossRef]

59. Frey, B.S.; Stutzer, A. Happiness, Economy and Institutions. *Econ. J.* **2000**, *110*, 918–938. [CrossRef]

60. Sands, G.; Reese, L.A. Fair weather friends? The impact of the creative class on the economic health of mid-sized US metropolitan areas, 1990–2009. *Camb. J. Reg. Econ. Soc.* **2013**, *6*, 71–91. [CrossRef]

61. Minkov, M. What Makes Us Different and Similar: A New Interpretation of the World Values Survey and Other Cross-Cultural Data. *J. Cross Cult. Psychol.* **2007**, *39*, 654–658.

62. Mould, M. *Against Creativity*; Verso: London, UK, 2018.

63. Landry, C. *The Creative City: A Toolkit for Urban Innovators*; Earthscan: London, UK, 2000.