Human capital, cultural values and economic performance in European regions

Mikko Weckroth\textsuperscript{a} and Teemu Kemppainen\textsuperscript{b}

INTRODUCTION

Succeeding in a modern knowledge economy requires from an individual a wide set of skills, motivations and capabilities. These characteristics are embedded in populations of nations, regions or cities and can be broadly labelled as human capital. The question then becomes how to measure this capital. A well-known example of this operationalization is that by Richard Florida who aimed at expanding the education-based measure of human capital, and claimed that it is the creativity of individuals that matters for economic outcomes (Florida, 2002, 2005). While we agree that an education-based definition of human capital can and should be updated, it is clear that Florida’s definition of creativity lacked theoretical foundations and made hasty assumptions about causal mechanisms drawn from a spatial coexistence between ‘creative’ occupations, urban amenities and broad cultural groups such as bohemians or sexual minorities. The main shortcoming of the creative class thesis was due to its atomistic and individualistic focus which did not link into the broader literature addressing the interaction between culture and economy (Bourdieu,
This study makes both a conceptual and an empirical contribution to the literature on human capital, and argues that human values can be used to link motivation to a certain type of behaviour, such as creativity, to economic outcomes. However, human values do not exist or develop in a vacuum but are the results of historical trajectories on cultural, institutional and economic development. Thereby, a cultural and ecological perspective – in contrast to an atomistic and individualistic focus – on human capital assumes that creativity, along with other motivational constructs, is best understood as a collective effort of most individuals of the region rather than the presence of exceptionally creative individuals. However, applying this type of cultural perspective presents the causality between values and economy noticeably complex, as the stage of economic development adversely affects motivation and possibilities of populations to achieve certain values such as individualism, self-direction – and creativity. In statistical terms, the relationship between economic and cultural development is characterized by various feedback loops that complicate the analysis of cause-and-effect mechanisms. Thereby, this cross-sectional analysis does not make strong claims about the direction of causality, but the main interest is to analyze the association and overlap between the economic and cultural geography of Europe and to discuss alternative perspectives for understanding their spatial covariance.

PERSPECTIVES ON THE GEOGRAPHY OF HUMAN CAPITAL, CREATIVITY AND ECONOMIC PERFORMANCE

During the last few decades the literature on regional and urban studies has devoted serious attention to concept and measures of creativity. As Jamie Peck put it, ‘Creativity is the new black’ (Peck, 2007, p. 1). The primus motor behind this ‘hype’ is Florida who suggested that human creativity has become the primary engine of 21st-century economic development (Florida, 2002, 2005). According to him, since this development is primarily driven by the so-called ‘creative class’, cities and regions need to respond to the lifestyle preferences of this class while competing in increasingly global labour markets. Even though these arguments have been well received by policy-makers and urban leaders they have not gone unchallenged in academia and the debate on urban creative policies has been intense (Peck, 2005, 2007; Storper & Scott, 2009). However, it has also been noted that while arguing about the originality of the Floridian thesis and the neoliberal agenda embedded in creativity strategies, an important point made by Florida has been missed: a justified call for better measures of human capital and creativity (Bode & Perez-Villar, 2014; Boschma & Fritsch, 2009; Horlings, 2015; Storper & Scott, 2009).

Thereby, this study offers a theoretically grounded measure for what we call ‘value-based human capital’ extracted from the literature on human values (Inglehart, 1990; Rokeach, 1973; Schwartz, 1992). It implements regional aggregates of three different human values – ‘achievement’, ‘power’ and ‘self-direction’ – from the 6th round of the European Social Survey (ESS), as predictors for the level of economic performance in 289 NUTS regions in Europe. The aggregates of these motivational constructs in a population would indicate a ‘place-based culture’, that is, the norms and attitudes prevailing in a region relevant to economic outcomes (Beugelsdijk & Noorderhaven, 2004; Huggins & Thompson, 2015).

Thereby, this paper contributes to the ongoing debate concerning the optimal measure for human capital and its relevance to the geography of an economy. Within this debate, a counter-argument to Florida’s thesis arrives from the tradition of new urban economics (NUE) arguing that education captures as a proxy measure all those intangible assets possessed by individuals relevant to the concept of human capital. As Glaeser (2005, p. 3) noted, ‘what Florida is actually measuring is human capital’. From this perspective, once regional attributes such as population density and the stock of highly educated people have been controlled for, cultural characteristics...
should not have a statistically significant effect on economic reality. Instead, an insight from the NUE would assume that the highest levels of gross domestic product (GDP) are found in areas with high population density (benefitting from various agglomeration effects) and concentration of education-based human capital (Glaeser & Gottlieb, 2009; Glaeser, Ponzetto, & Tobio, 2014; Glaeser & Saiz, 2004).

Inspired by this ongoing conceptual debate in the human capital literature, this study analyzes the spatial interdependence between the human values of ‘achievement’, ‘power’ and ‘self-direction’ and the level of economic performance including an extensive set of control variables and controlling also for spatial autocorrelation. The main interest is on the value of ‘self-direction’; as in Schwartz’s value theory it refers to motivation for independent thought and action, choosing one’s own goals, creativity and exploration and, hence, connects to Florida’s thesis on creative class and human capital.

However, the contributions of this paper aim beyond the Glaeser (education-based human capital) versus Florida (creativity-based human capital) debate. By focusing also on the values of ‘achievement’ and ‘power’, the analysis connects to a wider range of theories addressing the relationship between the economy and culture. For instance, following neoclassical economic theory, emphasizing competition, rationality and self-interest, one would assume that the values of ‘achievement’ and ‘power’ are associated with a high level of economic performance as they indicate a motive for upward social mobility and entrepreneurial behaviour. On the other hand, drawing from cultural studies, and especially human values literature, Ronald Inglehart’s (Inglehart, 2001) modernization thesis suggests the exact opposite with the values of ‘achievement’, ‘power’ representing ‘survival values’ associated with lower levels of overall societal development, modernization, and economic performance. Welzel and Inglehart (2010) suggest that as societies develop and go through the transition from industrial to knowledge societies they systematically experience a shift from survival values, emphasizing economic and physical security, to self-direction values focusing more on individual agency and self-determination.

By stressing the role of history and path dependency, Inglehart’s modernization theory converges with the fundamentals of evolutionary economic geography (EEG) (Kogler, 2015; McCann, 2014). Thereby, this study also contributes to the disciplinary intersection between the NUE and the EEG regarding their different perspectives on investigating the spatiality of economic development. The first one, NUE, is mainly interested in the different forms of spatial effects taking place in the economic landscape and aims at universal relationships and so-called ‘global models’ (McCann, 2014). EEG, however, puts more emphasis on the role of institutional, cultural and economic history shaping this landscape and instead of universal relationships is more interested in contextual effects and local epistemologies (Jones, 2015; Martin, 2015). These perspectives lead to different empirical strategies while operating with cross-sectional data with a significant amount of cultural and institutional heterogeneity.

Regarding this study, drawing from the perspective of EEG one would hence argue that as Europe is characterized by a high degree of such heterogeneity the relationship between values and the economy may not be uniform due to the different institutional and economic histories of its societies and regions. Thus, aiming at global models through mechanically including country dummies might not be the optimal method for understanding the spatiality of the culture–economy relationship. Therefore, as an alternative to a ‘place-neutral’ (Barca, McCann, & Rodríguez-Pose, 2012) model, this analysis will also map the key variables in order to detect relevant socio-institutional patterns on different geographical scales that can be used to localize the spatial variation of the coefficients in the global model. In other words, we ask if the geographical units being modelled belong to larger systems that share similar institutional and economic histories reaching beyond fixed national boundaries.
Thus, the interest of this study address two specific disciplinary interfaces which results in different empirical strategies. The first part of the analysis approaches the data from the perspective of spatial economics and seeks answers to the following questions:

1. What is the spatial interdependence between different forms of ‘value-based human capital’ and regional economic performance in Europe? How does this interdependence change once we include a set of control variables including education-based human capital and population density? How does this interdependence change once we control for spatial and country specific effects?

These questions can be answered by following the standard procedures of ordinary least squares (OLS) and spatial regression models. However, we consider that important aspects regarding the framing of the analysis might be neglected while mechanically including country dummies. Thus, following the insights of EEG, we try to detect those ‘big processes’ and ‘larger structures’ (Martin, 2015, p. 259) from visualizations of the key variables, which would link the cases together as a system. Thus, we continue with the empirical analysis, apply a more geographical view of the economy, and ask the following questions:

2. How sensitive is this spatial interdependency to the scale used in the analysis? Also, how do the coefficients drawn from the ‘global model’ vary within a study region with a high degree of cultural and institutional heterogeneity?

However, we start this analysis with a literature review of the empirical studies inspired by Florida’s thesis and then specifies the limitations of the existing education- and occupation-based measure of human capital.

**EDUCATION- AND OCCUPATION-BASED MEASURES OF HUMAN CAPITAL**

Since Florida’s first book in 2002, there has been an ongoing debate about the most accurate measures for human capital and creativity and their relation to economic landscape. As Florida’s definition of the creative class is rather straightforward: ‘people who add economic value through their creativity’ (Florida, 2005, p. 4), it is obvious that it is not easily instrumentalized. Later on Florida focused more on occupation-based human capital and specified a group called the ‘Super Creative Core’ consisting of a wide range of occupations such as archivists, librarians, and related information professionals, mathematicians and statisticians as well as various types of bohemians and artists. According to Florida, the presence of this class is crucial for the economic success of any city or region.

Studies reinvestigating the creative class thesis have included empirical analyses in both the US (Donegan, Drucker, Goldstein, Lowe, & Malizia, 2008; Glaeser, 2005) and European context (Beugelsdijk & Noorderhaven, 2004; Boschma & Fritsch, 2009; Marrocu & Paci, 2012, 2013), using either education- or occupation-based measures for human capital. One frequently cited analysis was made by McGranahan and Wojan (2007), who also focused on the US context but extended the analysis to rural counties and used a more restrictive definition of creative occupations. Controlling for several region-specific features, they found that creativity had a significantly positive effect on the employment growth of a region.

In the European context, Boschma and Fritsch (2009) followed Florida’s measures of creativity more closely and built a spatial error model for analyzing the effect of various proxies of human capital on employment growth in a dataset of NUTS-3 regions in Europe. First, the results of their
descriptive analysis in 503 regions in six European countries showed that the creative class, categorized into a 'creative core', 'creative professionals' and 'bohemians', is unevenly distributed across European regions. However, their preliminary growth model looking at the effect of employees in creative occupations on regional employment growth rates revealed different effects between the countries included in the study: the 'creative class' indicators outperformed education-based measures in the Netherlands, whereas the opposite effect was found in Germany.

Later on Marrocu and Paci (2012, 2013) conducted two studies where they considered the effect of three non-overlapping categories of human capital on labour productivity. They constructed more disaggregate classifications of creative occupations than Florida by dividing them into 'creative graduates', 'bohemians' and 'non creative graduates'. Their analysis showed that creative and non-creative graduates contribute significantly both to explaining total factor productivity (TFP) in 2007 (Marrocu & Paci, 2012) as well as labour productivity growth in 2002–2007 (Marrocu & Paci, 2013).

All in all, the consensus on the most accurate measure of human capital and creativity, as well as their linkage to economic outcomes, is yet to be reached. One likely reason for this is that all the studies reviewed above rely on a rather mechanical division in categorizing individuals into occupations assumed to contain a high degree of creativity. Thus, the different categorizations lead to different results. The problematics of an occupation-based approach is summed up by Boschma and Fritsch (2009, p. 419), who wrote that a ‘more dynamic approach should be taken for measuring creativity rather than assuming that creativity is automatically inherent in members of the creative class’.

In other words, why should we assume that librarians and archivists are especially creative but not, for example, taxi drivers and waitresses? While it is most likely that there is variance on the degree of individual creativity, occupation-based measures of human capital or creativity might only document the opportunities that different occupations provide individuals to implement their creativity (or other motivational constructs). In any case, an analysis operating with an occupation-based human capital would need to assume a highly meritocratic society with perfect social mobility. If these issues are ignored, an analysis focusing on the spatial co-existence between members of the creative class and a high level of economic performance could simply result in a verification of the current class structure of these societies, which can be – and often is – used as a justification for ‘creative policies’, as the rigorous critique by Peck (2007) argues.

To conclude, this analysis at hand suggests aggregated value orientations as a more coherent measure for human capital than the presence of certain occupations. This type of ecological analysis working with regional aggregates would suggest that it is somehow the collective effort of most individuals of the region that contributes to the economic performance rather than a smaller minority of super creative entrepreneurs. Also drawing from Ingehart’s thesis, one could suggest that creativity – along with other forms of motivation-based human capital – should be treated more as a societal and cultural phenomenon rather than an asset possessed by certain individuals or group of individuals. This type of ecological analysis would refer to a locally shared system of meanings, norms and attitudes rather than to an atomistic analysis focusing on individuals or occupations belonging to the ‘super-creative core’ (Florida, 2005). Thereby, an analysis following this ecological framework would ask how these values, norms and attitudes manifest themselves in different locations creating a certain ‘place-based culture’.

PLACE-BASED CULTURE

The literature on the relationship between culture and an economy is obviously a perennial theme in social sciences reaching back to the classic writing of Max Weber (Weber, 1930), who argued that institutional and cultural conditions define the incentive structure of economic agents. Another classic is Pierre Bourdieu (Bourdieu, 2005), who analyzed varying degrees of
social, economic and cultural capital. One more contribution to this literature, which is not so frequently cited in the economic literature, was made by a social psychologists Geert Hofstede (Hofstede, 1980), who defined culture as a ‘collective programming of the mind’ or a ‘shared system of meanings’.

Considering the place-based manifestations of culture and values is a much more novel approach within the disciplines of economic geography and regional studies. A recent summary of this literature was made by Huggins and Thompson (2015, p. 149), who wrote that ‘Culture – be it community or economic – forms a part of the place-based development systems linking economic performance with societal well-being’. Huggins and Thompson’s paper draws from a long tradition in the social sciences reaching back to the classic writings of Tönnies and Weber, and the empirical part of their analysis reported that the community culture embedded in places was associated with the prevailing economic culture at local level.

Elsewhere, the role of local cultural characteristics has been conceptualized as ‘people’s climate’ by Florida (2005), ‘regional self’ by Syssner (2009) and ‘values in place’ by (Horlings, 2015). Common to all these concepts and their instrumentalizations is that they refer to a locally shared system of meanings and values, which affect economic outcomes. An empirical analysis following this approach was made by Beugelsdijk and Noorderhaven (2004), who analyzed the effect of entrepreneurial attitude on economic growth in a cross-sectional analysis of 54 European NUTS-2-level regions and showed that a high score on entrepreneurial values in a region is associated with a high rate of regional economic growth.

An obvious way to instrumentalize any characteristics of culture is to rely on survey data with relevant survey items and with a specific location indicator for each respondent. Thereby, this analysis treats regional aggregates of NUTS regions more meaningful instrument for culture versus economy analysis than the presence of a so-called super creative core. It also enables one to draw upon a broader set of literature on the culture–economy relationship (Inglehart, 1990, 1997; Schwartz, 2001).

**CONCEPTUAL FRAMEWORK AND EMPIRICAL STRATEGY**

The theoretical foundations for a measure of ‘value-based human capital’ are drawn from the concept of universal human values, which have been shown to affect individual behaviour and decision-making (Schwartz, 2001). A pioneer theorist on values studies Milton Rokeach (Rokeach, 1973, p. 3) described the transdisciplinary importance of the value concept noting that ‘The value concept [is] able to unify the diverse interests of all the social sciences concerned with human behavior’.

Even though there are different value concepts and measures available, the universal Human Value Scale developed by Shalom H. Schwartz has established itself as the most commonly used and repeatedly tested measure of value orientations (Schwartz, 2015b). Of the 10 values specified by Schwartz, three specific values were included in this analysis based on their theoretical relevance for economic analysis. These specific values and the goals and motivation they express are as follows:

- ‘Power’ – social status and prestige, control over resources and people.
- ‘Achievement’ – personal success through demonstrating competence according to social standards and norms.
- ‘Self-direction’ – independent thought and action, choosing one’s goals, creativity, and exploration.

In the context of this study the value orientation of ‘Power’ is interpreted as a certain form of self-interest representing a motivation for upward social mobility leading to economic activity.
Achievement is understood mostly as a social achievement emphasizing its interpersonal nature (Honneth, 1995) and referring to a tendency for social comparison, showing competence and success. Finally, ‘Self-direction’ is based more on internal motivation than social comparison. High ‘self-direction’ indicates the motivation to independent thought, action, creativity and self-determination and, hence, connects to the literature on creative class and cities.

In the empirical strategy of this paper these variables are treated as independent variables predicting a level of economic performance in 289 NUTS regions. In addition to bivariate association, one is interested to see how these change after adding a set of control variables including population density, share of the tertiary educated population, quality of governance (QoG) index, research and development (R&D) expenditure, and employment rate. The variables used in this study are described in more detail in Table 1.

### Table 1. Description of the variables.

| Variable       | Scale or unit | Year  | Source         | Description                                                                 |
|----------------|---------------|-------|----------------|----------------------------------------------------------------------------|
| **Dependent variable**                  |               |       |                |                                                                            |
| GDP            | €/inhabitant  | 2011  | EUROSTAT       | Gross domestic product (GDP) per capita at 2011 market prices                |
| **Value orientations**                  |               |       |                |                                                                            |
| Self-direction | 1 (very much like me) to 6 (not like me at all) | 2012 | European Social Survey (ESS) | ‘to think new ideas and being creative’<sup>a</sup> |
| Achievement    | 1 (very much like me) to 6 (not like me at all) | 2012 | ESS            | ‘to show abilities and be admired’<sup>a</sup>                             |
| Power          | 1 (very much like me) to 6 (not like me at all) | 2012 | ESS            | ‘to be rich, have money and expensive things’<sup>a</sup>                  |
| **Control variables**                   |               |       |                |                                                                            |
| Tertiary education | % of population | 2011 | EUROSTAT       | Population aged 25–64 with a tertiary education (International Standard Classification of Education (ISCED) levels 5–8) |
| Density        | population/km² | 2011 | EUROSTAT       | Absolute value of population/km²                                            |
| R&D            | €/inhabitant  | 2009  | EUROSTAT       | Gross Domestic Expenditure on Research and Development (GERD)               |
| Employment     | % of population | 2011 | EUROSTAT       | Employed persons as a percentage of the total population.                  |
| QoG index      | Standardized index | 2010 | Quality of government (QoG) webpage | Survey data on the level of corruption and governance |

Note:

<sup>a</sup>As a response to the following question: ‘Now I will briefly describe some people. Please listen to each description and tell me how much each person is or is not like you. For he/she it is important ….’ For the regression analyses the scale in value orientations was reversed into 1 = not like me at all to 6 = very much like me.

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Of the control variables, tertiary education and population density are of specific interest as the insight of NUE suggests that these are the most significant predictors of economic activity in regions. As a crude generalization, a combination of high population density and share of the tertiary-educated population would refer to a variety of agglomeration effects and knowledge spillovers beneficial for the local economy (Glaeser & Gottlieb, 2009; Glaeser & Saiz, 2004; Glaeser et al., 2014). After including the control variables in the model, we also address the spatial autocorrelation of GDP across the NUTS regions. We apply the series of Lagrange multiplier tests, as described by Anselin (2007), to determine the optimal procedure.

We also consider an alternative to the ‘orthodox’ procedure in spatial economics, which is to include country dummies in the model in order to control for the unobserved country fixed effects. Hence, we apply a more geographical perspective to the analysis of economic landscape and consider that the variation of the cultural and institutional frames in the study region is of specific interest and should be further investigated. Thus, we place the key variables on a map and try to detect larger structures or geospatial families that can be interpreted as alternative groupings or geographical scales instead of conventional country dummies.

In other words, we try to detect those clusters or geo-social families (cf. Ferrera, 1996) that overlap with both the economic and the value landscapes and thus also suggests something about their spatial interdependence. In this case, we see that the most suitable classification for the framework of this analysis is the concept and typology of ‘welfare state regimes’ as it reflects societal norms and protocols regarding the allocation of their economic resources and the coverage of the social security network (Esping-Andersen, 1990; Friedberg & Kangas, 2008) which are most likely associated with both the values prevailing within these societies as well as their economic performance.

As the literature on welfare regimes has developed a great deal since Esping-Andersen’s (1990) seminal work, we apply a typology of five groups, namely, the Anglo-Saxon group (Ireland and the UK), the Continental (Austria, Belgium, France, Germany and the Netherlands), the Eastern European (Czech Republic, Hungary, Poland, Slovenia and Bulgaria), the Nordic (Denmark, Finland, Norway and Sweden), and the Southern European (Italy, Spain and Portugal) (e.g., Friedberg & Kangas, 2008). Hence, four welfare regions (the Nordic served as a reference group) are entered into the regression models in order to specify and localize the spatial variation of the relationship between different value climates and economic performance.

**DATA DESCRIPTION**

The data for value orientations is drawn from the 6th round of the European Social Survey (ESS) from 2012. The ESS is an academically driven cross-national survey that has been conducted every two years across Europe since 2001. It is an extensive cross-national dataset with varying levels of regional analysis permitted, depending on the round and the country. The description of the regional level used according to the year and country as well as their statistical inference can be found online from the ESS (2015).

The 21-item Human Values Scale has been included in every ESS round from 2002 up to today. Compared with other value measures, Schwartz’s Human Value Scale has the advantage of focusing on universal values that are recognized throughout all major cultures, which makes the value scale suitable for cross-national and cultural analysis (Schwartz, 1992). In this study the individual scores for each value combine two survey items each and are calculated following the instructions of the author (Schwartz, 2015a).

The whole dataset in the 6th round ESS data contained 54,673 individual responses from 29 countries. For this study we confined the analysis to those countries that used NUTS nomenclature as a sub-national location indicator. Thus, after excluding Austria, Croatia, Greece, Latvia, Romania, Israel, Kosovo, Russia, Ukraine and Turkey we were left with 37,956 responses from
24 countries. These individual responses were then aggregated to present a total of 297 NUTS regions. Further on, we excluded ‘islands’ (regions without neighbours) in order to simplify the spatial analysis. This resulted in a dataset containing 289 regions from NUTS levels 1–3.

The data from the ESS and EUROSTAT were then merged based on the smallest possible common nominator on their NUTS level. All the control variables except the quality of governance (QoG) indicator are from the EUROSTAT database and are as up to date as possible at the time of writing. The QoG indicator was downloaded from Charron, Dijkstra, and Lapuente’s (2014) website; is from the year 2010.

RESULTS

We begin with descriptive statistics for all the variables included in the analysis shown in Table 2. Table 2 shows significant regional variation concerning the dependent variable, GDP, ranging from several regions in Bulgaria as low as €2600–72,600 per capita in Oslo and Åkerhus region. Control variables also show significant variation such as employment rate, which ranges from 39.4% in Campania in Italy to 81.8% in Central Switzerland. The value orientations are reported regional means of the individual variables. The difference between the regional means reflects a certain level of social norms as ‘self-direction’ has a significantly higher mean (0.31) than ‘achievement’ (–0.38) and especially ‘power’ (–0.91).

Before moving into regression models we make visualizations of the key variables, GDP and the three value orientations. Looking at the spatial distribution of the dependent variable is particularly useful relating to the model selection addressing spatial effects. Also, looking at the variables in a map highlights the difference between procedures of applying either ‘country fixed effects’ or ‘socio-historic spatial patterns’ as an optimal scale for the analysis. Thereby, we are see this as a more data-driven approach instead of relying on a priori model selection.

Visualizations

First, Figure 1 shows that compared with Western Europe and the Nordic countries, Eastern Europe is associated with lower levels of economic performance. Although Eastern Europe is at a lower level as a whole, it also contains some capital regions with relatively high GDP per capita such as Budapest in Hungary and Sofia in Bulgaria. Thereby, Figure 1 suggests that Eastern
Europe could be regarded as one of those larger historical and economic structures linking the cases together as a system. Additionally, the Nordic countries could also be regarded as a distinctive entity characterized by relatively high GDP and small within-country variance. The arising question is whether similar patterns are also present in the cultural dimensions of these societies in terms of ‘value-based human capital’.

First, Figure 2 shows that ‘self-direction’ follows a broadly similar division to that of GDP in Figure 1. On a national scale, ‘self-direction’ is highest in Germany, the Netherlands, Switzerland and the Nordic countries of Denmark, Sweden and Norway and, to some extent, Finland. In general, ‘self-direction’ is concentrated in countries where GDP is also at a high level, which supports Inglehart’s modernization thesis. Additionally, in countries with a high GDP and ‘self-direction’, especially in Germany and the Nordic countries, ‘self-direction’ is rather equally distributed across the regions. However, sub-national patterns are more diverse in the southern and eastern parts of Europe where the highest levels are found in certain urban regions. This is especially visible in Spain where the highest level of ‘self-direction’ is found in Madrid (ES30 Comunidad de Madrid). In Italy, the regions of Umbria (IT12) and Trento (ITH2) have higher values compared with the rest of the country. Eastern Europe is characterized by relatively low levels of ‘self-direction’ with a few exceptions such as the regions of Budapest (HU101) and Fejer (HU211) in Hungary. A similar division between East and West is also to some extent visible in the case of Germany: in general ‘self-direction’ is at higher level in West Germany compared with East Germany with the exception of Berlin (DE3) and the surrounding Brandenburg region (DE4).

Figure 3 presents broadly a reversed image compared with the previous as higher values on ‘achievement’ are concentrated in countries with a low GDP per capita, and vice versa. Again, these patterns give further support to the Inghelhart’s modernization theory which assumes a negative relationship between ‘achievement’ and level of economic development. The pattern detected in Figures 1 and 2 is here reversed most accurately in the case of the Iberian Peninsula with a distinct difference between Spain and Portugal. In general, compared with Portugal the regions in Spain score higher on ‘self-direction’ and GDP but there is also a clear north–south pattern within Portugal where the north reveals higher values in GDP (Figure 1) and ‘self-direction’ (Figure 2).
and the south is characterized by lower GDP and higher ‘achievement’ (Figure 3). These results offer a further validation for Inglehart’s modernization thesis regarding the systematic interplay between certain types of ‘value climate’ and the level of economic development.

Finally, Figure 4 shows that ‘power’ follows broadly similar patterns to those for ‘achievement’ (Figure 3) and reversed images of GDP (Figure 1) and ‘self-direction’ (Figure 2). Figure 4 also

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**Figure 2.** Self-direction by NUTS regions. The classification is based on a ‘natural breaks’ optimization.

**Figure 3.** Achievement by NUTS regions. The classification is based on a ‘natural breaks’ optimization.
provides a further validation for the interpretation made about the Iberian Peninsula showcasing systematic differences between Spain and Portugal and a north–south pattern within Portugal.

Finally, an intriguing pattern emerges when focusing more closely on the Anglo-Saxon context and especially the UK. Regarding the value orientation of ‘power’ (Figure 4), London scores significantly higher (–0.69) than the rest of the country (mean = –1.01). A similar pattern can be identified in Figures 2 and 3 where London has a relatively high score on ‘achievement’ but a low score on ‘self-direction’. In other words, regarding the ‘value climate’ London resembles Eastern Europe more than Western Europe even though it is characterized by an especially high economic performance (in terms of GDP).

Regressions

We start with simple aspatial regression models presented in Table 3.

The first column contains the unstandardized coefficients of the bivariate models for each of the predictors separately. The results show that the value of ‘self-direction’ has a strong positive association with the dependent variable, whereas the values of ‘achievement’ and ‘power’ have a negative and statistically significant association. These bivariate associations could be assumed based on the visualizations in Figures 1–4. All the control variables also have a positive association with the dependent variable. One aim of this analysis was to see how this relationship between different forms of ‘value-based human capital’ and the level of economic performance changes after including a set of control variables. This association is presented in the second column in Table 3 with an OLS regression model including all the control variables for the model. The results show that even though adding the control variables reduces the estimates, ‘achievement’ retains the negative association and ‘self-direction’ still has a positive, statistically significant and relatively strong relationship with the level of economic performance.
Spatial and geographic regressions

A geographic dataset, such as the one used in this analysis, is subject to spatial autocorrelation violating the assumptions of the standard OLS regression analysis. A failure to account for the spatial autocorrelation of the residuals – typical in the case of GDP – would risk building the analysis on incorrect estimates.

Here we introduce three procedures that aim to address the geographic nature of the dataset. First is a statistical approach in order to address only the spatial autocorrelation of the regions (model 3); the second includes the geospatial families detected in the visualizations to the model (model 4); and the third is to construct interaction terms between value orientations and welfare regimes in order to specify spatial relationship between specific values and economic performance. The results are shown in the Table 4.

In the first model (3), the spatial lag model was chosen due to both theoretical reasoning (regional GDP is most likely to be affected by spillovers, i.e. ‘contagion’) and the results of the Lagrange multiplier test series suggested by Anselin (2007). The spatial lag model included in the first column in Table 4 further reduces the estimates as compared with the OLS model, but ‘self-direction’ still retains its positive and significant association. Initially, these results support the thesis that place-based cultural characteristics have an independent association with economic outcomes, which is not accounted for by economic control variables or spatial effects and spillovers of the dependent variable.

The second column (model 4) in Table 4 introduces country regimes to the model. Figures 1–4 indicated that socio-historic spatial patterns emerge from the data that could be utilized in the modelling instead of mechanical country dummies. Visualizations suggested that the level of a region’s economic development or ‘value climate’ is not primarily defined by its placement within a single country but within a group of countries. Thereby, the theoretical considerations regarding using the welfare regimes as a frame was supported by the data. In technical terms, welfare regime appeared as relevant scale for the analysis as country regimes alone (in bivariate analysis) explained 71.8% of the variance of regional GDP.

Thereby, the second column (model 4) in Table 4 shows that after including regime dummies, control variables and spatial lags the model ‘self-direction’ still serves as a strong predictor (0.131*** ) for regional economic performance. Additionally, welfare regime dummies also reveal that as Eastern Europe has a significant negative effect (−0.163***). They carry information that

### Table 3. Parameter estimates.

| Dependent variable: NUTS-level GDP (log) | Model 1 | Model 2 |
|------------------------------------------|---------|---------|
| **Value orientations**                   |         |         |
| Self-direction                           | 1.156***| 0.282***|
| Achievement                              | −0.598***| −0.093**|
| Power                                    | −0.481***| −0.037  |
| **Control variables**                    |         |         |
| Employment rate                          | 0.032***| 0.007***|
| Density (log)                            | 0.131***| 0.074***|
| R&D expenditure (log)                    | 0.467***| 0.306***|
| Tertiary education                       | 0.021***| −0.002  |
| QoG index                                | 0.265***| 0.000   |
| Akaike information criterion (AIC)      | −72.2   | −346.9  |
| Adjusted $R^2$                           | 0.62    | 0.86    |

Notes: Model 1: all variables are independent in the model (bivariate coefficients); $R^2$ is from the self-direction variable; model 2: all variables are included in the model.

***Significant at 1%; **significant at 5%; *significant at 10%.
could not be fully explained by the set of control variables used in this analysis. Models presented in Table 4 also appear superior to the aspatial models in Table 3 as the Akaike information criterion (AIC) in model 3 is \(-511.4\) compared with \(-346.9\) in the OLS model (2) in Table 3. However, if relying only on technical terms, the most precise model would be that which includes country dummies to the model (see Table A1 in Appendix A in the supplemental data online), which has \(\text{AIC} = -643.4\). As discussed above, in order to extract a so-called global model, this procedure, however, filters out the geographical framing of the data instead of investigating it further. Additionally, it also does not allow one to specify the spatial variation of coefficients within the geographical dataset.

Thereby, the final stage of the empirical analysis asks whether it is possible to specify this spatial variation of the interdependence between ‘value-based human capital’ and economic performance by using the welfare state regimes, that is, geo-social families as a ‘frame’ for the analysis. This was done by constructing interaction terms between value orientations and welfare regimes. First, the full model (5) in Table 4 shows that there is significant spatial variation when regarding the coefficients of the global model in Table 3. More specifically, a positive relationship between regional economic performance and ‘self-direction’ is found only within the Eastern European welfare regime (0.360***).

| Parameter estimates. | Model 3 | Model 4 | Model 5 |
|----------------------|---------|---------|---------|
| **Value orientations** |         |         |         |
| Self-direction       | 0.117***| 0.131***| -0.119  |
| Achievement          | -0.022  | -0.033  | -0.055* |
| Power                | 0.001   | 0.040*  | 0.112*  |
| **Control variables** |         |         |         |
| Employment rate      | 0.004***| 0.004***| 0.006***|
| Density (log)        | 0.069***| 0.089***| 0.090***|
| R&D expenditure (log)| 0.133***| 0.112***| 0.103***|
| Tertiary education   | 0.002***| -0.002**| -0.002* |
| QoG index            | -0.014  | -0.019* | -0.025**|
| **Country regimes**  |         |         |         |
| Anglo-Saxon          |         |         | -0.076***| -0.028  |
| Continental          |         |         | -0.060***| -0.124  |
| Eastern European     |         |         | -0.163***| -0.438***|
| Southern European    |         |         | -0.039   | -0.199  |
| **Interactions**     |         |         |         |
| Self-direction*Anglo-Saxon | 0.322  |
| Self-direction*Continental | 0.118  |
| Self-direction*East European | 0.360***|
| Self-direction*South European | 0.073  |
| Power*Anglo-Saxon    |         |         | 0.231*  |
| Power*Continental    |         |         | 0.002   |
| Power*Eastern European|         |         | -0.113  |
| Power*Southern European|       |         | -0.087  |
| AIC                  | -511.4  | -539.5  |         |

Note: Model 3: value orientations, control variables and spatial lags included to the model; model 4: value orientations, control variables, country regimes, and spatial lags included to the model; model 5: value orientations, control variables, country regimes, interaction terms, and spatial lags included to the model.

***Significant at 1%; **significant at 5%; *significant at 10%.
Additionally, Table 4 validates the interpretations discerned in the visualizations (Figures 1–4) regarding the Anglo-Saxon context. The figures on GDP and ‘value-based human capital’ showed that London (with an extremely high GDP) is characterized by a lower-than-country average for ‘self-direction’ but higher averages for ‘achievement’ and ‘power’. The third column in Table 4 shows that when regarding the value of ‘power’, this relationship is robust, as it holds even after the inclusion of an extensive list of control variables (at 10% level). In other words, London appears as an anomaly within the Western European context, which is generally characterized by high ‘self-direction’ and economic performance.

**DISCUSSION**

This study investigated the spatial interplay between the regional characteristics of culture – namely, measures for ‘value-based human capital’ – and the level of economic performance. Owing to its cross-sectional nature, this analysis resulted in a snapshot of the current state of overall development – both cultural and economic – and suggests that this picture should be primarily interpreted as an outcome of interconnected and path-dependent historical and institutional processes. As such, the study yielded results that offer support to Inglehart’s modernization theory but place it in a more localized sub-national context. The visualizations of different forms of ‘value-based human capital’ and supported by the regression models paint a picture where Western Europe and the Nordic countries have already moved to the post-materialistic phase of the modernization process characterized by high levels of economic performance, self-expression values and modest regional disparities. Instead, Eastern Europe appears still to be in the process of transformation where relatively strong regional inequalities in economic terms are reflected also in their ‘value climate’. Thereby, the results connect, converge as well as give further validation to the classic economic analysis on the relationship between regional inequality and the process of national development (Williamson, 1965) but link the economic perspective more thoroughly on concepts and measures on cultural and societal change.

This study has focused on two specific disciplinary interfaces. The first addressed the different forms of human capital and their relevance to regional economic performance. The analysis showed that ‘self-direction’, as one form of ‘value-based human capital’, has a positive and significant association with regional GDP, even after controlling for spatial effects, including an extensive set of control variables that included a measure for education-based human capital. However, this regional pattern seems to hold only in economically less developed societies, whereas in higher levels of economic development the country level appears as the primary geographical repository of value differences.

The second disciplinary interface dealt with the question of how to address the high degree of cultural and institutional heterogeneity in the study region. The quintessential question is whether this heterogeneity should be filtered out of the model (including country dummies) or investigated further. Embracing the perspective of EEG, we build on the latter and defined welfare regimes as larger historical and institutional constructs, which could be used in order to specify and localize the spatial interdependence drawn from the global model. The main insight from this exercise is that even while operating with cross-sectional data, applying the evolutionary perspective to the analysis can deepen the understanding of the landscape of economic activity. Thereby, this landscape should be studied in parallel to concepts on institutional and cultural development and as such we see this study as an example of the type of analysis defined as ‘evolutionary–historical geographical political economy’ by Jones (2015, p. 260).

Finally, we would like to suggest some directions for future research:

- This study used regional aggregates of values as predictors for overall economic output, GDP. Future research could focus on more exact measures on both sides of the equation.
For example, an economic analysis would most likely want to move away from an ecological perspective and focus on different forms of ‘value-based human capital’ in specific occupations or industries. Additionally, the dependent variable could be replaced with a more precise indicator of creative economy such as the number of patents or TFP.

• This study has remained silent on the issue of selective migration and the role of ‘value-based human capital’ on migration patterns. In regional analyses the composition of the population (such as the amount of human capital) is treated merely as an attribute of a region and often limited interest is placed on the question of whether this composition results from selective migration or is created \textit{in situ}. The cultural and evolutionary perspective of this study suggests the latter, whereas the Floridian thesis is wrapped around the assumptions of the first. This is a highly relevant question regarding the potential policy suggestions are to be drawn from the analysis. The question is even more essential if the policy suggestions are offered to policy-makers as a ‘one-size-fits-all’ solution, as creative policies often are. The perspective of this study suggests that both supply and demand for ‘self-direction’ and creativity could be defined by larger path-dependent processes, which puts Florida’s thesis of creative class in a rather questionable light. Having said this we do not suggest that analyzing migration patterns based on ‘self-direction’ or other value-based motivational constructs is not an important topic for geographical analysis, but just the opposite. Future research could thereby investigate the migration patterns based on ‘value-based human capital’ and Schwartz’s Human Value Scale offers a theoretically grounded measure for such an analysis.

• This study suggests that at least one area could be the subject of a case study. The analysis defined London as an anomaly amongst the capital cities of Western Europe where an especially high GDP is associated with high value of ‘power’ instead of ‘self-direction’. Recent literature has defined London as a playground for the super-rich manifested in enormously high housing prices, and a high level of inequality indicating a culture of greed and self-interest (Dorling, 2010). The results of this study give tentative support to such claims from the perspective of the human values literature. In the conceptual framework of this analysis we related the value of ‘power’ with motivation for social status and prestige leading in turn to economic activity. However, ‘power’ can also be linked to negative externalities such as rent-seeking behaviour and moral hazards and as such London would appear as a city where such values are localized. The value change over time in the UK capital along with certain economic indicators would thereby deserve further interest.

• Finally, future analyses should focus more specifically on the question of causality between cultural values and economic performance and growth. Inglehart’s thesis suggests that the cross-sectional model also could be formulated the other way around: the economic development might also influence, for example, self-direction values in society. As noted by Inglehart (1997, p. 216), the relationship between culture and economy is highly complex and ‘is not an either/or preposition; cultural and economic variables play complementary roles and both are needed to produce growth’. Thereby, future analysis should seek geographical datasets that enable the analysis of temporal changes in both cultural and economic development. We believe that this analysis describing the spatial patterns and cross-sectional interdependencies would serve as an important groundwork for such analyses.
NOTES

1. This paper does not excel in its knowledge of the different traditions within economic geography or regional science, nor is it the focus of the paper. Disciplines are discussed here in a broad manner in order to position this interdisciplinary analysis with regard to the overall field of studies addressing the spatiality of economic activity. The NUE here is a similar construct to the New Urban Agenda described by McCann (2014). Common features for both research programmes are (1) personalization around the work by Glaeser, (2) a primary interest on urban agglomeration economies, (3) a strong econometric focus, and (4) an emphasis on global models and universal relationships.

2. As an anonymous reviewer noted, EGG is significantly broader research agenda than the one presented here. For example, within EEG much more emphasis has been placed on firm-level routines than broader cultural or institutional processes. However, EEG is introduced here in a broad manner together with Inglehart’s modernization theory in order to emphasize their shared interest on path dependencies and evolutionary processes which are both relevant for understanding the spatiality of economic activity.

3. For a review of the conceptual and theoretical overlap between Inglehart’s and Schwartz’s value dimensions, see Dobewall and Strack (2014).

4. The results of the Lagrange multiplier test are included in Appendix A in the supplemental data online. Results suggest spatial lags to be used in all models 3–5.

5. A model including country dummies is included in Appendix A in the supplemental data online.

6. The interaction between welfare regimes and the value orientation ‘achievement’ was left out of the model as none of the interactions was statistically significant at the 10% level.

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ORCID

Mikko Weckroth http://orcid.org/0000-0002-1697-2125

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