

# Cultural Capital and Income Inequality across Italian Regions

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## Abstract

Historic cultural institutions are known to predict local inequality, but the moderating effect of modern cultural attitudes has not been thoroughly elucidated. Our hypothesis is that local inequality is determined by a moderating mechanism based on the balance between cultural heritage and living culture. We use a unique panel dataset for Italian regions, covering 2010 to 2016, and observe that regional inequality decreases where cultural heritage interacts with a more altruistic modern living culture. A finite mixture model suggests spatial clustering of inequality, dividing Italy into three areas. This reveals cultural capital-driven frictions in the spatial redistribution of human capital.

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## Introduction

Cultural participation has often been reduced to a marker of upper-class snobbism. But what if we see the function of cultural consumption in a Veblenian manner (Veblen 1973) as a mechanism for creating a distinction that gives access to the upper classes and therefore as a potential tool for increasing social mobility? Here, we ask whether and how such individual behaviour could make an important difference in regional development. Recent behavioural regional economics (Obschonka, Fritsch and Stuetzer 2021; Huggins and Thompson 2021) suggests that behavioural mechanisms can generate implications at the regional level. By extension, we argue that cultural consumption behaviour in particular has an impact on regional inequality.

All empires fall due to inequality (Acemoglu and Robinson, 2012; Flannery, 2012; Duncan, 2017), and this might also be true for the faith of most prosperous regions. The argument begins to resonate very convincingly if one notices the importance of cultural taste for equality among mobile human capital and the increasing rates of inequality in urban centres.

Rossi-Hansberg and Wright (2007) suggest a dynamic model of frictions<sup>1</sup> in the redistribution of economic growth, namely, redistribution due to frictions in human capital relocation in space. However, local culture is not considered in this model as a source of friction but only as a static idiosyncratic term in the utility function. Meanwhile, we know (i) that culture matters for the clustering of human capital in space (Tubadji and Nijkamp, 2015; Florida et al., 2017), (ii) that culture changes over time, and (iii) that richer places are more unequal (Behrens and Robert-Nicoud 2014) and unhappier (Glaeser et al. 2009).

Our main argument is that culture can be expected to be a dynamic source of frictions in economic growth. Changes in the local cultural taste for tolerance and equality<sup>2</sup> likely affect the level of inequality in a locality, creating important frictions in the spatial clustering of the tolerance and equality-loving creative human capital.

We suggest that the mechanism behind these frictions is driven by cultural complexity in the interaction between inherited and contemporaneously consumed regional cultural capital. Historical institutional differences have been shown to influence local inequality through cultural persistence (Acemoglu and Robinson, 2012; Alesina and Giuliano, 2015). Sociology and philosophy have long shown that historical perceptions change through a process of cultural

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<sup>1</sup> Frictions in regional economics is a term standing for impediments in the efficiency of a market usually leading to a loss of growth (Wasmer and Zenou, 2006; Chiu, Meh and Wright 2017).

<sup>2</sup> Here, we use the term 'taste for tolerance/equality', inviting association with Becker's (1957) classical notion of 'taste for discrimination'.

construction and deconstruction of what is distinguished as valuable in the present<sup>3</sup>. It has been partially demonstrated that modern cultural participation (Gomes and Libero-Cano, 2018) and diversity (Katz-Gerro et al., 2009) are related to perceptions of inequality between groups in a locality. Nevertheless, contemporaneous cultural attitudes (i.e., living culture) as causes for local inequality are surprisingly under-researched (Donald and Grey, 2019). This applies to the question of how contemporaneous cultural attitudes interact with inherited attitudes from the past to create inequality. To address the latter underinvestigated question, we revisit Pierre Bourdieu's (1986) concept of cultural capital and its mechanism for creating inequality.

Pierre Bourdieu (1986) coined the term cultural capital, explained as the power to construct distinction that creates socioeconomic inequality. He defined cultural capital as the assets and behavioural traits associated with cultural participation, i.e., the possession of art objects and cultural markers of prestige such as accents or titles (for example, Bourdieu, 1973; Bourdieu and Passeron, 1979).

Since Bourdieu's original definition of cultural capital exists at the individual level, we adopt the Culture-Based Development (CBD) definition of cultural capital, which adapts the cultural capital definition to the regional level. CBD defines regional cultural capital as the local endowment of tangible and intangible cultural resources grouped into living culture and cultural heritage (Tubadji 2012, 2013). Living culture encompasses contemporary (economically endogenous) cultural consumption/cultural participation. Cultural heritage encompasses the inherited belief system and cultural assets present in a locality from past periods<sup>4</sup>. Endowment with such tangible and intangible cultural capital has been extensively studied as a factor for local productivity (Tubadji and Nijkamp, 2015; Tubadji et al., 2016). Pierre Bourdieu's original concept, however, focuses on the topic of inequality.

Bourdieu (1973; 1986) originally suggests that cultural capital acts as a source of social class stratification through a complex interaction of cultural capital with social capital and human capital (Bourdieu 1986). In this way, Bourdieu's mechanism relates to Rossi-Hansberg and Wright's (2007) types of models through the nexus of human capital.

To the best of our knowledge, the current paper is the first to adopt Bourdieu's perspective regarding the effect of local cultural capital on inequality at the regional level. In particular, recombining the classical regional economic notion of spatial frictions (Wasmer and Zenou, 2006; Behrens et al. 2017) with the CBD definition of cultural capital, we aim to analyse (i) the

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<sup>3</sup> See the classical literature on Wittgenstein (1929); Derrida (1967).

<sup>4</sup> Building on Bourdieu (1989) the heritage part of cultural capital is the part of cultural capital inherited from the previous generation. On an aggregate level this corresponds to the assets inherited from previous generations inhabiting this locality (Tubadji 2012, 2013). Furthermore, the notion of inheritance of social status (prestige in Bourdieu's terms) is termed intergenerational transmission in the regional literature and is widely studied (see Corak 2013; Durlauf and Seshadri 2018).

relationship between local cultural capital (and its interactions with social and human capital) as a main input factor of interest and income inequality as the main output of interest, coining this relationship the ‘Bourdieu Effect’; and (ii) the spatial heterogeneity of this relationship in the regions of Italy from 2010–2016.

We choose to test the existence of this relationship using data regarding Italian regions, as they have been extensively analysed with regard to their cultural heterogeneity (Putnam 1993). We also address the implications for spatial heterogeneity in Italy (Bagnasco, 1977; Bianchini, 1991; Daniele, 2015).

Our main findings suggest that cultural capital, as mediated by social and human capital, is associated with significant spatial differences in regional inequality and regional growth. Thus, the value added of our research entails revealing a complex mechanism for the impact of cultural capital on within-region inequality, which is a cultural-behavioural source of frictions in the spatial redistribution of growth.

The remainder of this paper is organized as follows. We offer an overview of the key ideas in the economic literature regarding cultural capital (CC), human capital (HC) and social capital (SC), their impact on income distribution and its spatial heterogeneity. Next, we outline our empirical CBD-Bourdieu model in a Rossi-Hansberg and Wright (2007) setting. A presentation of our unique dataset follows, and penultimately, the analysis of the empirical results is offered. Some discussion of policy implications concludes the study.

## **Cultural Capital and Income Inequality**

Our study used CBD’s adaptation of Bourdieu’s cultural capital notion and hypothesizes that the relationships between regional cultural capital and social and human capital determine local inequality. Our reasoning is outlined in the following flow chart, depicting the ‘Bourdieu Effect’.

+++ Insert Figure 1 about here +++

As shown in Figure 1, the expectation of the CBD paradigm is that when the living culture component (related to cultural participation) dominates the composition of local cultural capital (over the cultural heritage component), the local cultural milieu is more inclined towards tolerance and equality for all groups in the region. Such a milieu interacts with social capital and human capital in a manner that decreases inequality and creates frictions in the redistribution of economic development in space (see Appendix 1 for a detailed analytical description of Figure 1).

Below, we review the existing regional economic literature supporting this reasoning. To do this, it is segmented into four subsections:

- (i) to understand the complex structure of cultural capital in CBD terms;
- (ii) to consider the link between cultural capital and human capital;
- (iii) to consider the link between cultural capital and social capital;
- (iv) to acknowledge the spatial heterogeneity of cultural capital for correct predictions of regional income inequality.

### *Cultural Capital*

In a series of comprehensive studies, Pierre Bourdieu establishes the concept of cultural capital as an individual endowment that is a source of inequality among identical peers (Bourdieu, 1986; Bourdieu and Passeron, 1979). Bourdieu (1986: p.243) defines cultural capital as a combination of the objectified (cultural assets-related), cultural participation-related and prestige-related (intangible) endowment of an individual, part of which is inherited in a path-dependent way from one's parents, and the remainder acquired by one's own culture-related behaviour. This capital serves to distinguish an individual socially.

The mechanism of socioeconomic inequality that Bourdieu puts forward regards the relationship between cultural capital (used for socioeconomic distinction) and the social recognition of value and merit. In the case of schooling, according to Bourdieu, children with higher cultural capital are more likely to receive recognition for their ability at school than equally able students with lower cultural capital (Goldthorpe, 2007; Waller, 2018). We shall term this the 'Bourdieu Effect', understanding it more generally to mean that endowment with cultural capital affects inequality through an interaction with human capital.

The use of the concept of cultural capital in regional economic analysis, however, requires one more step. Namely, the concept of cultural capital needs to be adapted from the individual to the regional level<sup>5</sup>. Over the last decade, the CBD paradigm has adapted Bourdieu's definition of cultural capital to the regional level. CBD defines local cultural capital as the potential of local attitudes to deeply influence socioeconomic development: "... because of differences in historical conditions, cultural capital differs significantly between different locations. Local cultural capital shapes local people's values and attitudes that determine their choices and

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<sup>5</sup>Notably, Throsby (1999) introduced the term cultural capital to the study of the economics of culture. He unpacks the dual nature of cultural capital as a special type of assets characterised by both economic value (the cost of the materials for producing a good) and cultural value (the socially ascribed additional valuation of this good or service). However, this understanding of cultural capital still leaves the notion in need of being adapted to and operationalized narrowly on a regional level.

interactions” (Tubadji, 2013: p.4). In essence, this means that cultural heritage corresponds to the culture produced in the past and its inheritance through parents’ cultural assets and prestige, which are elements of Bourdieu’s original individual cultural capital definition. Meanwhile, living culture corresponds to contemporaneously generated cultural assets and individual behavioural components (such as accents). The contemporaneous component might be informed from inheritance but can also be modified (for instance, by purposefully training oneself out of one’s habitual accent). The balance between inheritance and novelty in the current moment in time can only be empirically identified since any form of socioeconomic persistence, especially at the aggregate level, differs across time and space (Voth 2020). Cultural heritage serves as a source of distinction through inherited identity, while living culture distinguishes more flexibly based on behavioural patterns of contemporaneous individual cultural consumption that are claimable by people of any identity. Thus, cultural heritage is associated with distinction that creates more rigid social closure than living culture. We note here that in this CBD setting, it is most important that individuals and places can change the living cultural component (by training themselves to lose their accent, for example, or by acquiring cultural participation tastes unfamiliar to the social origins of their parents). This makes cultural capital an endogenous dynamic factor of any economic model. Cultural dynamics are sensitive to the internal complexity of cultural capital and depend on the relationship between cultural heritage and living culture, i.e., which of these components dominates the cultural capital entity.

Cultural heritage is known to be associated with the concentration of human capital (Backman and Nilsson, 2018). As noted by Chen (2006), local cultural heritage gives rise to a local atmosphere, elsewhere called a milieu. However, we note that greater cultural heritage gives reason for more social closure based on a more highly valued inherited identity. Tubadji and Nijkamp (2014) clarify the detrimental role of the closed cultural milieu in attracting foreign human capital to a locality. More generally, theoretical models suggest that sticking rigidly to the old cultural rules and norms in a locality makes certain potentially optimal equilibria unattainable (Richter and Rubinstein 2015).

Living culture is famously argued by Florida (2002) to attract creative people. Bellandi et al. (2019) show that participation in living culture varies across space, depending on the age structure, local productive specialization and social demography. Cultural participation is also found to positively impact the proactive behaviour of socio-economic agents (Crocata et al., 2015); therefore, spending on living culture in cities increases during election periods (Nogare and Galizzi 2011).

Most importantly, there seems to exist an interaction between cultural heritage and living culture (Peackocks, 1998; Hutter and Rizzo, 1997; Burt, 1997; Clarke, 2000). As notably stated by Clarke (2000), cultural heritage is a stock existing in a trade-off with free space for new construction. Put differently, as space and resources are limited, some cultural heritage has to be destroyed (if material) or deconstructed (if immaterial) for novel living culture to be produced in contemporary periods.

### *The Interaction of Cultural Capital and Human Capital*

Bourdieu (1986) suggests that cultural capital affects human capital inequality since individuals can accumulate less overall human capital with the same ability when they have a lower stock of cultural capital. Given this and the above summarized cultural economics literature, we expect that at the local level, human capital and cultural capital can be expected to have a complex relationship. The existing literature seems to support these expectations.

Introduced by Gary Becker (1975) and later underlying endogenous growth theory, the notion of human capital was extensively used first to explain inequality at the individual level (Mincer, 1958). Generally, workers with advanced education are more productive, more likely to be employed and have higher earnings. In line with this, the returns to education are greater for the higher levels of education (Colclough et al., 2010). However, OECD (2016) finds that while human capital has a shielding effect from poverty, there is a greater difference between the average income of adults with tertiary education and upper secondary education than between those with upper secondary and those with less than upper secondary education. It is not clear why exactly this between-groups inequality exists.

On the local level, regarding inequality and human capital, we know that richer places (cities) often tend to be more unequal (Kuznets, 1955). Goldin and Katz (2007) find that wage inequality can be explained by a higher wage premium for more highly educated people. Berry and Glaeser (2005) argue that the increasing wage premium is greater in more educated (and innovative) cities. Moreover, regarding cultural capital, contributions in New Cultural Economics, such as Suarez-Fernandez et al. (2019), report an association between the type of cultural consumption (high-brow versus popular culture) and educational level.

This evidence seems to suggest that the local level of human capital is associated with the type of living culture in the locality. This is particularly likely from the perspective of the 'Bourdieu Effect' as a result of the following CBD neo-Veblenian rationale (Veblen, 1973). More education, associated with higher wages, is likely to be associated with the consumption of more high-brow culture, which is more expensive and driven by inherited tastes. The ability to afford higher expenses naturally correlates with higher wage premiums, but newly rich people often



lack an inherited taste for high-brow culture. To achieve the highest wage premium, educated newly rich individuals need to distinguish themselves socially through cultural participation as a source for the distinction of good taste, and they often fail to do so. Thus, better educated newly rich individuals cluster more in richer places but end up with lower relative wage premiums due to lesser social distinction.

### *Interaction of Cultural Capital and Social Capital*

According to Bourdieu (1973; 1986), there is a clear difference and interaction between cultural capital and social capital. Namely, less cultural capital stock offers less social distinction. Thus, it equips the individual with less connectedness- and cooperation-related social support. Moreover, Crociata et al. (2017) show evidence for the positive impact of cultural capital on the level of awareness about a variety of socioeconomic issues concerning daily and long-term practices, behaviours and habits.

Many existing definitions of social capital (see Bourdieu, 1986; Putnam, 1993) are so complex that they cannot be used interchangeably across the paradigms to which they belong. Therefore, we use here the definition of social capital as “the links, shared values and understandings in society that enable individuals and groups to trust each other and so work together” (OECD, 2007: p. 102), which seems appropriate for this study. In addition, the literature delves into numerous aspects of social capital: its impacts, its forms of use, its transmission, and the utility it generates (Robison and Ritchie, 2010). Here, we focus on its link with inequality.

Multiple studies document the importance of social capital for income inequality (Knack and Keefer, 1997). Putnam (1993) and Bigoni et al. (2016) confirm that social capital differences exist between northern and southern Italy. In addition, Daniele (2015) shows that this South-North dualism in Italy relates to differences in cultural and educational backgrounds. These findings seem to suggest that there is an interaction between cultural capital and social capital, with implications for inequality. However, this interaction has been insufficiently explored. One reason is the lack of a clear distinction in the literature between social capital and culture in regional economics.

To consider both social and cultural capital simultaneously, some empirical complexities must be addressed. Above all, two conditions should be ensured. The parts of social capital related to trust attitudes, which are part of cultural capital, have to be excluded from the measurement of cultural capital. Additionally, the measure of cultural capital (excluding the social capital part) and the measure for social capital should not be strongly correlated to avoid collinearity biases.

These empirical hurdles are addressed in our empirical section (see Appendix 2 for further clarifications on the measurement of social capital and the important role of altruism).

### *Modelling Regional Income Inequality*

#### *Regional Inequality and Its Determinants*

Regional income inequality has been researched by employing various approaches: from descriptive geography, through power laws about population size, to convergence- and productivity-related models, as summarized below (Wei, 2015; Lessmann and Seidel, 2017). Most research, however, is focused on comparing between-region inequality rather than explaining within-region inequality and its determinants.

The descriptive geographical approach includes mapping the spatial distribution of inequality (Ballas et al., 2017) and identifying the location of poor and rich geographies (Lee et al., 2016). It links this clustering to central place theories, agglomeration theories (Ottaviano and Thisse, 2003) or dynamics leading to segregation and polarization tendencies (Crankshaw, 2017). All these approaches largely map inequality against economic growth without necessarily explaining the link. In essence, they treat inequality as if it is just a side effect of another process (such as segregation or sorting), behind which the models assume a pure economic drive. The same holds true for the Zipf distribution-related power law, which depicts inequality in relation to the growth of population. The same applies for the Kuznets inverted U-shaped relationship between economic growth and inequality (Kuznets, 1955). These power law approaches are often tested to confirm whether the relationship exists in the functional form assumed. However, the underlying causal mechanisms (why this relationship would hold) are usually left as empirically unapproached assumptions of the model (Yamamoto, 2008), while the causal direction might even be reverse (Reardon and Bischoff 2011). Above all, none of these approaches pays sufficient attention to the dynamics of cultural capital as a bias or main drive for the inequality created in space. Instead, they assume that the taste for cultural endowment is a static idiosyncratic term in the utility of human capital (similar to Rossi-Hansberg and Wright, 2007).

The class of income inequality models that attempts to analytically explain inequality has articulated an association between income inequality and mostly the usual determinants of economic development. Studies find an association between inequality and trade flows (Rodrigues-Pose, 2012) and migration flows (Shorrocks and Wan, 2005). Human capital has also been confirmed to be strongly associated with inequality (Lee et al., 2016). Investment flows have been found to have a strong association with inequality (Basu and Guariglia, 2007)

and innovation (Breau et al., 2014). All these findings are certainly not surprising since the association between economic growth and inequality clearly leads to an association between inequality and all well-known determinants of economic growth, such as human capital, migration, trade and financial flows and innovation (as part of the creation of new knowledge). To the best of our knowledge, what remains rather neglected in regional economics research on inequality is one very important determinant of economic growth: cultural capital.

A special characteristic of culture as a determinant of economic growth is that it is also a determinant of all the other factors listed above. It is well known that culture (often defined as home bias) influences trade and investment flows (Tadesse and Shukralla, 2013). Cultural bias drives the cultural gravity effect discussed in the context of migration flows (Tubadji and Nijkamp, 2015). The cultural impact on innovation and growth is narrowed down to certain culturally sensitive attitudes, such as fear of failure, risk aversion, risk avoidance, and uncertainty-related attitudes (Audretsch and Dohse, 2007). These cultural links are all based on clearly defined mechanisms. However, the influence of the local host of cultural attitudes on egalitarianism as a driver of economic inequality is specifically neglected as a topic in regional economic research. We address this gap in the literature on regional inequality by bringing forward the 'Bourdieu Effect' and its mechanism.

### *The Spatial Heterogeneity of Regional Inequality in Italy*

Our second main contribution to the cultural and regional economics literature concerns the spatial heterogeneity of cultural capital among the regions of a country. Italy is a traditional example discussed in terms of spatially heterogeneous economic development and inequality (Williamson, 1965; Odoardi and Muratore, 2019). There are two alternative hypotheses about the pattern of spatial disparities in Italy. The country is argued to be divided into two major parts (the 'Mezzogiorno' hypothesis) or into three main parts ('the Third Italy' hypothesis).

The presence of a dual divide between the North and South in Italy was called the Italian Mezzogiorno by Fortunato (1911), who called this the 'questione meridionale'. In essence, this take suggests that inequality exists due to historical institutional differences between the two parts of the country. Similarly, a study by Guiso et al. (2016) found that civic capital differs between northern and southern Italy due to cultural persistence related to institutional practices from the Middle Ages.

Bagnasco (1977) proposed that the central part of Italy has taken its own independent path of development due to enterprise evolution. He suggested that the country operates on three different gears of development in northern, central and southern Italy (or periphery). The

emergence of a new centre between two poles of development is expected according to agglomeration theory.

However, evidence has been presented on both sides of the ‘Third Italy’ hypothesis, and in this context, Bianchini (1991) argues that the ‘Third Italy’ was a temporary (potentially living culture-driven) effect that died off due to incorrect policy interventions. Thus, the existence of a dual or triple spatial disparity in economic development across Italy remains an empirical question. Above all, if any type of heterogeneity exists, it needs to be empirically accounted for.

## Method

This paper explores a novel avenue by focusing on cultural capital as a determinant of income inequality at the regional level through the mechanism of the ‘Bourdieu Effect’. The ‘Bourdieu Effect’ is relevant to the general mechanism of the redistribution of economic development across space, as suggested by Rossi-Hansberg and Wright (2007). Namely, in the spatial frictions model, a person’s utility function is assumed to have the following shape:

$$u_t^i(r_-, r) = a_t(r) \left[ \int_0^1 c_t^\omega(r)^\rho d\omega \right]^{1/\rho} \varepsilon_t^i(r) \Pi m(r_{s-1}, r_s)^{-1} \quad (1)$$

where  $u$  is the utility derived from a region by the individual,  $a$  is the appeal of amenities,  $\omega$  is the location preference,  $\varepsilon_t^i(r)$  is a location preference shock that is *iid* Frechet ( $\Omega$ ) and  $m$  is the cost of moving between the old and new regions.

Rossi-Hansberg and Wright (2007) assume that  $\omega$  is static and idiosyncratic. Instead, we suggest that  $\omega$  is a function of income inequality explained by the dynamics in local cultural capital adjustments between cultural heritage and living culture. This is the regional economic implication of our suggested ‘Bourdieu Effect’<sup>6</sup>.

To test for the existence of this ‘Bourdieu Effect’, we adopt the following empirical model (2) expressing our main working hypothesis that cultural capital (and its complex interaction with human and social capital) affects inequality:

$$Income\_Inequality = \beta_1 Piketty\_ratio\_r > g + \beta_2 CC + \beta_3 SC + \beta_4 HC + + \beta_5 X + e \quad (2)$$

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<sup>6</sup> This means first that local cultural capital and individual culture create a predictably different  $\omega$  for people from certain cultural backgrounds (Tuabdji and Nijkamp 2015). Second, it also means that there is local cultural hysteresis which is defined as the different local cultural milieus’ responses to an identical external shock (see Tubadji, Angelis and Nijkamp 2016).

where *Income Inequality* is the standard Gini coefficient<sup>7</sup>; *Piketty ratio*  $r>g$  is the rate of return on investment in a region as a ratio of the region's growth rate (Piketty, 2014) (which captures the economic structure of regional inequality; i.e., it quantifies the degree of structural redistribution between the owners of capital and the general population; we regard this as an initial condition for inequality in the structure of the economic system); *CC* is the stock of cultural capital and is a complex factor composed of cultural heritage and living culture components; *SC* is the local amount of social capital; *HC* is the local share of human capital, i.e., one of the standard explanatory variables for regional income inequality and convergence (Lee et al., 2016). Jointly, *CC*, *SC* and *HC* are three human-based capitals, which represent the behavioural component in the economy moderating the effect of Piketty's ratio; *X* is a vector of other standard explanatory variables for regional income inequality, a selection of those that are least expected to be related to culture in a causal manner including labour force heterogeneity (share of youth) (Beenstock and Felsenstein, 2008), structural characteristics (share of employment in different economic sectors) (Breau et al., 2014), the share of urban land in the region (Shorrocks and Wan, 2005), and population size (Ballas et al., 2017). The error term *e* captures unexplained heterogeneity. Empirical model (2) is stated with a suppressed constant for brevity.

Our estimation strategy consists of three steps: (i) quantifying cultural capital and statistically distinguishing the social capital component; (ii) testing the main hypothesis that the interaction between *CC*, *HC* and *SC* affects local inequality; and (iii) testing for spatial heterogeneity of inequality and its exact (dual vs triple) pattern and considering the implications of this heterogeneity for the relationship between cultural capital and inequality.

First, we quantify cultural capital and its complex entity in a precise manner. There are three elements of our quantification strategy with regard to cultural capital: (i) the monodimensional variable proxies for culture need to be tested for independence from each other using pairwise t-tests to determine whether we can use them together as explanatory variables without creating collinearity issues; (ii) if they are different according to pairwise t-tests, model (2) would be underspecified if the estimation were done using only one of the monodimensional variables as a proxy for culture; and (iii) factor variables can be obtained through principal component factor analysis to properly quantify the complex entity of cultural capital and to optimize the degrees of freedom during estimation. Using all these main factors as regressors in model (2) comprises a full specification for the model, avoiding eventual overspecification

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<sup>7</sup> The Gini coefficient is one of the most frequently used measures for income inequality. See for example, De Gregorio and Lee (2002) or Castelló-Climent and Doménech (2014).

due to the use of too many similar variables and avoiding cultural underspecification due to the use of only one variable that does not capture the entire meaning of the entity cultural capital. Second, we test several specifications of model (2) using a pooled OLS with time and region fixed effects. This is possible since we have a panel structure in the data (an unbalanced panel of 21 NUTS 2 regions over 7 years, amounting to approximately 200 observations). We estimate five specifications for model (2). As all the variables in  $X$  are potentially endogenous to *Cultural\_Capital*, in Specification 1, we estimate only the parsimonious version of the model using *Piketty\_ratio\_r>g* and *Cultural Capital* as determinants. In Specification 2, we include the full battery of  $X$  variables. Specification 3 represents the core specification for our empirical test of the ‘Bourdieu Effect’ since it contains the interactions between cultural capital and human capital and the interactions between cultural capital and social capital. Specifications 4 and 5 estimate the core specification separately for regions in northern and southern Italy<sup>8</sup>, respectively.

Third, to address the potential spatial heterogeneity of inequality and the ‘Bourdieu Effect’, we employ finite mixture modelling (FMM). This allows us to identify the most precise data-driven number of homogenous subgroups of regional income inequality in the country (Wedel and Kamakura, 2012). The advantage of this approach is that it does not impose a predetermined definition for the clusters. It empirically determines how many clusters are defined by using their observable characteristics and endogenously assigning regions to groups within which the estimated effect of the impacting factors is similar.

## Data

Our data cover 7 years between 2010 and 2016 on the NUTS 2 level for Italy. We have indicators related to inequality, cultural, social and human capital and some determinants of local development<sup>9</sup>. We also obtained numerous regional cultural indicators from different sources. Table 1 presents in detail the descriptive statistics for our full dataset. Appendix 3 shows the data sources and the precise definition of each individual variable. Appendix 4 provides the rationale from the existing literature for using our particular cultural indicators.

+++ Insert Table 1 about here+++

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<sup>8</sup> Employing this approach for the triple ‘Third Italy’ division requires dividing the pooled cross-sections of 200 observations into three groups resulting in a very low number of observations within each group. Therefore, we do not present those results here.

<sup>9</sup> We consider the Eurostat NUTS 2 division, which divides Italy into 19 regions and 2 autonomous provinces, but due to data availability problems, we do not include one of the 2 autonomous provinces (Bolzano Province).

The main outcome of interest is within-region income inequality. While several measures could be used to indicate inequality in the income distribution (e.g., Levy and Murnane, 1992), we use the Gini index of income inequality, following a similar approach to De Gregorio and Lee (2002). The main determinant of interest is cultural capital. As seen in greater detail in Appendix 3, we accommodate a vast body of literature that has established certain measures for Bourdieu's cultural capital at the individual level. We find relevant proxies for these variables at the regional level. For instance, the individual use of disco-going as a popular cultural marker for distinction (Baumann 1990) is approximated at the regional level by the share of the population with personal engagement in cultural socializing (indicating the share of people who are likely to distinguish themselves as having popular taste through disco-going). Individual parental influence on building tastes is approximated using the regional share of visits to museums, reflecting the habitus of heritage (Dicks 2016). We organize these regional indicators by considering the CBD distinction between cultural heritage and the living culture. Thus, our cultural indicators are grouped around cultural participation (Węziak-Białowolska et al., 2018), museums (Guccio et al., 2018), religion (Knack and Keefer, 1997), blood donation (Andreoni, 1990), and voluntary activities (Putnam, 1993) (all 16 variables are listed in Table 1). These reflect living culture (minus altruism and social capital), cultural heritage (minus altruism and social capital), traditional social capital and contemporaneous altruism (which is clearly a pro-social behaviour). The regional living culture variables are expected to be associated with a decrease in regional inequality by signifying that people can create opportunities for social distinction through cultural participation that aid in social mobility. The cultural heritage variables are associated with an increase in inequality due to the social closure created when distinction is achieved on the basis of inherited identity: one's inheritance cannot be changed, blocking social mobility into the most prosperous group defined on the basis of inheritance-related distinction).

We use statistical tools to obtain a distinct quantification of social capital within this group of cultural capital variables, as explained in our methods and results sections. Regarding human capital, we use the share of people with education at the tertiary level and above. The use of this measure and its relevance for inequality studies is supported by De Gregorio and Lee (2002). We identified this battery of control variables by reference to the literature on income inequality and convergence, as summarized in the literature review.

## Results

### *Quantifying Local Cultural Capital*

This section explores the best quantification of cultural capital. This serves to address the potential cultural under- and overspecification of the model (see Tubadji, 2014).

First, we demonstrate the potential underspecification problem when using one monodimensional proxy of cultural capital by comparing our monodimensional proxies for culture using pairwise tests, as shown in Table 2a.

+++ Insert Table 2a here +++

The correlation coefficients between the monodimensional variables of cinema attendance, museum attendance, religiosity and blood donation are quite low<sup>10</sup>. This is to be expected, as these variables are proxies for substantially independent notions within the domain of cultural capital, such as material living culture, material cultural heritage, intangible inherited religious beliefs and attitudes, and intangible living culture (as expressed in specific pro-altruistic attitudes). This means that including only one of these monodimensional proxies for culture will by definition lead to underspecification of the model due to underquantification of the complex determinants of culture.

Second, to avoid overspecifying the model by including too many monodimensional proxies for culture, we consider using factor analysis to obtain a more aggregate measure quantifying cultural capital in a statistically precise manner. This justifies the use of factor analysis for all available cultural proxies in our dataset to distinguish which should be statistically grouped.

+++ Insert Table 2b about here +++

Table 2b presents the results of our factor analysis showing four clearly identified factor variables, according to the factor loadings after rotation. These four composite factor variables are (i) factor 1 - '*living culture (f1)*', which groups the cultural mono-dimensional proxy variables: theatres, concerts, other concerts, theatre plays (spectacles) and discotheque goers; (ii) factor 2 - '*social capital (f2)*', which groups the cultural mono-dimensional proxy variables: public spending, voluntary organizations and ecological attitudes; (iii) factor 3 - '*altruism (f3)*', which groups the cultural mono-dimensional proxy variables related to blood donation; and (iv) factor 4 - '*cultural heritage (f4)*', which groups the cultural mono-dimensional proxy variables: museum goers, visitors to archaeological sites and religiosity.



### *Testing the 'Bourdieu Effect' and its Interactions*

This section analyses the impact of cultural capital on income inequality and its interactions with human and social capital, the essence of our 'Bourdieu Effect' hypothesis. The results from a pooled OLS with time and region fixed effects for our five alternative specifications of model (2) as defined in the methods section are shown in Table 3.

+++ Insert Table 3 about here +++

Across all specifications, as expected by the 'Bourdieu Effect', we find that all three types of human factor-based capital (cultural capital, social capital and human capital) are significantly associated with within-regional inequality. Additionally, all elements of the complex entity cultural capital are statistically significant. The cultural heritage element and the two living culture elements – altruism and social capital – seem to be important on average for the whole country. It is interesting to note that in some specifications, the effect of social capital has an opposite direction to that of the rest of the elements of cultural capital. This is strictly in line with our initial expectations for the behaviour of model (2), confirming that social capital must be quantified separately.

The most important part of this test of the 'Bourdieu Effect' involves the interaction terms between CC, HC and SC. We analyse them below separately as (i) CC and HC interactions and (ii) CC and SC interactions.

The interactions between human capital and cultural capital (especially the cultural heritage part) have an important role in predicting higher levels of inequality for the entire country (Table 3, Specification 3). These results confirm the existence of the 'Bourdieu Effect' in terms of the link between cultural capital and human capital associated with inequality. Their interaction, however, has a surprisingly positive effect – it decreases inequality. When we divide the sample into northern (Specification 4) and southern regions (Specification 5), it becomes evident why we find this aggregate effect. In the developed North, there seems to be no shielding effect from human capital at all, nor is there an impact from cultural heritage. It is in the South where cultural heritage attracts human capital to some local centres. This leads to a seemingly beneficial clustering of human capital in some places with higher cultural heritage. De facto, these results are true only for economically worse off regions, being driven by within-South migration towards previous historic centres, thus inferiorly rebalancing growth according to our culturally augmented Rossi-Hansberg and Wright (2007) model.

The interactions between cultural capital and social capital show results consistent with our findings about the 'Bourdieu Effect' and confirm that this effect is strongly driven by cultural capital. Specification 3 shows that the interaction between social and human capital is the factor decreasing inequality, although both factors taken separately are associated with more local

inequality. Looking at Specifications 4 and 5, we see that in the North, cultural heritage actually does not matter, and it is the local social capital that drives inequality. Unfortunately, this social capital is of a parochial type (i.e., negative social capital) and does not allow sharing across classes. This finding agrees with Lucidi and Kleinknecht (2010), who argue that legal labour market changes that are unfriendly to the ageing population may prove problematic for the future economic development of Italian regions. In the South, education manages to act as a shield against inequality. This, however, is possible only because the living culture milieu in the South is associated with stronger philanthropic attitudes demonstrated by the fact that in the South, the altruism measure has a significant impact. It also appears that in the South, social capital directly decreases inequality.

### *Cultural Capital, Regional Inequality and Spatial Disparities across Italy*

The results from the previous section show evidence for spatial clustering between northern and southern Italian regions. However, the literature argues for the existence of three potential clusters in space. Therefore, we employ a finite mixture model as described in our methods section to identify the spatial heterogeneity more precisely. We test alternatively for clustering of regional inequality in two or three classes.

+++ Insert Table 4 and Figure 2a&b about here +++

As shown in Table 4 and Figure 2a, the finite mixture model suggests that clustering into three groups offers the best statistical fit to our data. Figure 2b shows the distribution of the probabilities assigned to each cluster identified by the two- and three-cluster specifications<sup>11</sup>. The histograms are polarized, indicating that for most regions, the probability of belonging to a specific cluster is either equal to zero or close to unity. Put differently, the identification into clusters is statistically rather strong. Further analysis of the effects of the explanatory factors for inequality within each cluster (Table 4) shows that the complex interaction between cultural heritage and living culture has a significant relationship with inequality in space, which acts in a unique manner within each cluster. This is in line with findings of heterogeneous behaviours of trust and social capital in Third Italy<sup>12</sup> (Boschma, 2005).

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<sup>11</sup> These results highlight an effective North-South division in contrast to the static administrative/historical division. For example, in Figure 2a, administratively, Basilicata (the region of the European capital of culture 2019, Matera) would be included with some regions of the centre-north. The categorization of Lazio and Abruzzo is also ameliorated. Abruzzo is historically South but is in reality much closer to the Centre (at least economically), while Lazio (historically centre-north) has some good economic ratings only thanks to Rome, but the rest of the region is largely similar to the South, as our clusters suggest.

<sup>12</sup> More specifically, the 'Third Italy' relates to the following division: North-West, North-East-Central and South Italy.

These results contribute to the literature on the spatial redistribution of growth (Rossi-Hansberg and Wright, 2007). They reveal that local cultural capital functions act as a driver of local income inequality, which coincides in a specific manner with the redistribution of human capital in space. Thus, local cultural capital seems likely to be a source of friction with a behavioural nature related to local income inequality.

Furthermore, our results show that three spatial clusters of regional development exist in Italy. However, the borders of these clusters do not coincide with the geographical boundaries of the Third Italy hypothesis. On the one hand, this concurs with recent research critical of the existence of Third Italy (Bianchi, 1998). On the other hand, these results seem to suggest the presence of a division in three clusters; only the borders of the clusters have changed location over time. The reasons for this noncoincidence between the borders identified here and the borders of the 'three Italies' can be several. First, there is a significant time lapse between the first studies that identified the 'three Italies' and the present case. Thus, there is a shifting economic centre explanation for the borders' mismatch over time, consistent with work on shifting centres of economic gravity over time (Tellier, 2009; Quah, 2011). Second, the period that we study has suffered its own economic shocks, testing the potential of local resilience of the regions, which may vary across space. There have also been policy interventions into the North-South dualism after the 1950s that have contributed to changes. Third, our basis for identifying the clusters is income inequality, which is somewhat different from economic development, which served as the original basis for identifying the "three Italies". Fourth, our border mismatch findings are confirmed by the literature, which reports continuous divergence among macro area developmental trajectories, which has led to the emergence of the "many Italies" hypothesis (Davis 2012). This literature bases its explanations for the division on the strengthening of the North-South divide (Dunford 2008). Determining which explanation is valid merits further data collection and empirical research.

## **Conclusions**

This study reveals the link between local cultural capital (the original notion of Pierre Bourdieu as adapted on the regional level by the CBD paradigm) and regional income inequality. It addresses two aspects. First, it examines the association between local cultural capital and inequality. Second, it offers insight into the complexity of the mechanism behind this association, termed the 'Bourdieu Effect', and delves into its spatial heterogeneity, considering the case of Italian regions over seven years (2010–2016).

The main contribution of this study is that it is the first of its kind in regional economics to study the link between cultural capital as a complex factor (considering both cultural heritage and living culture aspects) and inequality.

The methodological innovations in our analysis regard the application of an advanced approach to the quantification of culture, treating it as a composite measure. Our study highlights the importance of this approach to avoid cultural underspecification in the economic model in the most statistically efficient manner with regard to degrees of freedom. It also highlights the methodological importance of considering the interactions between the three human factor-based types of capital: cultural capital, social capital and human capital.

On a conceptual level, our study contributes by demonstrating that culture is a proto-institution that has a primary, independent impact on inequality, while social capital and human capital act mostly as mediators of the cultural effect. It is important to note that the effect of cultural capital breaks down into the effects of living culture (especially social capital) and cultural heritage. Cultural heritage coincides in space with the clustering of human capital. This human capital cannot significantly alleviate local inequality if the living culture in the locality is not strong enough and if the social capital in the region is not sufficiently pro-sharing in nature (as opposed to mafia-type negative social capital and clubism). This is the essence of the complexity in the cultural mechanism behind the 'Bourdieu Effect' at the regional level, which involves mediating the cultural heritage effect through social capital.

Thus, we contribute to regional science theory by identifying a potential complex cultural behaviour-related source of frictions in the redistribution of regional development. This source of frictions seems to be related to the interaction between living culture and cultural heritage in the local endowment of cultural capital. This source of cultural behavioural frictions highlights the importance of Hägerstrand's (1970) claim that people's cultural behaviour needs to be considered in the modelling of regional economic processes.

The social meaning of our contribution is that policy makers and individuals need to increase their awareness about the importance of the balance between historical cultural endowment and modern cultural participation. This balance seems to be a promising tool for intervention in economic inequality in a region, with implications for the redistribution of economic growth between regions. Our results suggest targeted interventions for creating a favourable balance between cultural participation and cultural heritage to ameliorate the local cultural milieu. Promoting a balance between cultural participation and heritage promotes a milieu where distinction can be achieved more flexibly based on one's own behaviour rather than being strongly dependent on the rigid inheritance-related divide. People can be helped to achieve easier social distinction and integration locally by engaging in shared cultural participation.

Furthermore, a more open milieu will increase the region's cultural gravity potential with all the related benefits for local development (Tubadji and Nijkamp 2015; Rossi-Hansberg and Wright 2007).

We can group the implications in terms of direct and indirect ones. On the one hand, such awareness-related interventions can be beneficial to Italy on many levels directly, since there are many different forms of inequality present across Italian regions: (i) economic inequality (with an average per capita income in the South approximately 60% of that in the North, according to ISTAT data), (ii) social inequality (the scarcity of social capital famously studied by Putnam 1993) and (iii) educational inequality (as there are approximately 5% fewer people with tertiary education in the South, according to EUROSTAT data). On the other hand, increasing awareness of the important interaction between living culture and cultural heritage can stimulate healthy social innovation in cities rich in cultural heritage, helping them manage their cultural heritage in a more sustainable manner. A strategically planned, finer balance between cultural heritage and living culture can help, for example, circumvent the high maintenance costs due to tourism exploitation through the redirection of tourist inflows between cultural heritage and living culture without economic loss for the cultural sector. Thus, our recommended policy interventions to ameliorate inequality may have indirect positive spillovers for certain sectors of the local economy as well.

While offering methodological and conceptual insights with important policy implications, the presented analysis uses a relatively small dataset. We include a considerable number of cultural indicators, yet the overall number of observations and the present panel structure impose certain limitations on our estimations. However, the approach presented here is easy to replicate with better and larger datasets, which can cross-check the validity of the reported results and add further insights. Future research may also use instrumental variables to empirically address the endogenous aspects of human capital, cultural capital and social capital, which we treat here according to the standard endogenous growth model, i.e., by including them directly in the model.

Finally, our study is the first to find empirical evidence for the impact of the CBD interpretation of Bourdieu's cultural capital on regional inequality. This justifies future revisitation of the work of Pierre Bourdieu and its adaption to regional economics questions about inequality.

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## ***Appendix 1: Analytical Description of Figure 1***

Fig. 1 presents a visualization of the CBD definition of cultural capital (CC), its relationship with social capital (SC) and human capital (HC) and its ultimate effect on inequality, which defines what we call the 'Bourdieu Effect'. CBD defines CC as local capital composed of material and immaterial forms (i.e., assets versus attitudes and beliefs), each temporally delineated into two types: cultural heritage (CH) and living culture (LC). SC can be considered part of the attitudes inherited and currently practised in living culture, but it can have important dynamics of its own, generating interaction and moderation effects on the rest of CC. Therefore, SC and CC have to be studied as two separate entities. The volume (stock) of (CC – SC) determines the magnitude of the effect from CC. If  $CH > LC$  in this stock, then SC is inclined towards creating a social closure related to distinction through belonging to the local CH. If  $CH < LC$  in this stock of CC, then SC is more pro-altruistically open to cooperation with any person, local or newcomer. Thus, given the same HC in time period  $t_1$ , the interaction between SC and CC will generate less inequality when  $CH < LC$ , as people will allow for more equal internal redistribution of socioeconomic resources, not only for a specially CH-distinguished group. Furthermore, in the long run, at time period  $t_2$ , the region where  $CH > LC$  will become so unequal that it will become less attractive for in-flowing HC. Thus, HC will decrease in this region and will move towards places where  $CH < LC$ . Clearly, according to Rossi-Hansberg and Wright (2007), this redistribution of HC will lead to redistribution of GVA as well. In short, Fig. 1 depicts the 'Bourdieu Effect' as a mechanism of the creation of culture-based spatial frictions, i.e., culture-related impediments for the reallocation of human capital in space due to the variation in the nature of cultural capital across space (in terms of the balance between cultural heritage and living culture accumulated in places).

The logic of the operation of the Bourdieu effect mechanism described in Fig. 1 can be summarized as follows. Given a *ceteris paribus* condition, differences in regional cultural capital determine the degree of pro-sharing behaviour<sup>13</sup> in the region and, by extension, the inequality level in the region. The concentration of more living culture regionally allows more people to achieve positive social distinction through cultural participation because in such localities, distinction is not limited to cultural inheritance but is also achievable by contemporaneous behaviour. In line with Bourdieu (1984), distinguished people are treated with more rapport in

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<sup>13</sup> Pro-sharing behaviour is a key term generally synonymous with "social capital" but focused on the behavioural propensity to cooperate in the form of sharing one's resources with other members of the group. It originated in evolutionary prosocial behaviour theory, it has a long tradition in the fields of social psychology and organizational behaviour and, from there, has been adopted into economics (for example, Haas and Park 2010; Gächter et al. 2017).

a society. When more people are positively distinguished in a locality, more people in that locality will enjoy rapport and esteem. When people enjoy rapport, they are more likely to cooperate with each other and gain easier commitments from others; put differently, more people are allowed to join in social networking. More social networking means more social capital because networking is associated with pro-sharing/redistributive behaviour within social networks. Thus, there will be more people who benefit from sharing in places where the networks are larger. This is how lower inequality among a larger group of people occurs regionally.

Moreover, the level of local inequality plays a role in the utility functions of those who make up mobile human capital, i.e., migrants have an equality-loving taste (Florida et al. 2017). Less equal places are less attractive culturally than places with higher equality levels and identical economic advantages. The latter places are preferred because their milieu is free from the anguish and pain of anxiety caused by perceptions of relative deprivation.

In short, CBD proposes here, in the spirit of Bourdieu and Veblen, that cultural participation is the behaviour through which inherited differences in distinction between classes can be levelled in a region. As the level of cultural capital is a dynamically changing variable related to cultural consumption, according to the model of cultural gravity in migration (Tubadji and Nijkamp 2015), Fig. 1 suggests that, in line with the spatial frictions mechanism (Rossi-Hansberg and Wright 2007), contemporaneous cultural consumption creates culture-based frictions in the redistribution of human capital across space, leading to differences in local productivity.

## ***Appendix 2: Quantification of Social Capital and the Role of Altruism***

For the proper quantification of social capital, it should be conceptually understood how it relates to altruistic feelings. Social capital depends on support based on cultural closeness and connectedness in a network, while the general linguistic and philosophical understanding of altruism is a love for any human regardless of how strongly connected she/he is to any group.

When social capital depends on belonging to a very particular identity, it can create strong social closure with negative effects on local development (as documented with the Mafia case in South Italy (Putnam 1993)). On the other spectrum of social closure is the love for every human being on equal basis, i.e., an attitude generally termed altruism, which (indifferent of definitional specificities which refer to a special case of altruism) is known to always be the most beneficial behaviour for the entire group (Becker 1981).

Altruism is empirically documented as related to aggregate regional economic performance (see Ulibarri 2000; Tubadji and Nijkamp 2014). To our knowledge, however, there is still no regional economic analysis that has looked at the empirical evidence and potential mechanism behind altruism (as part of cultural capital) and its interaction with human capital in terms of their effect on local/regional inequality.

We suggest here that the two human-based types of capital – cultural capital and social capital – have a complex link as follows. More open local cultural capital (with a predominant living culture) is expected to be associated with higher social capital. A more closed cultural milieu (where the local cultural capital is dominated by cultural heritage) is associated with a lower endowment of social capital. This is because distinction based on local historic identity leads people to exhibit less general altruistic attitudes and show preferential treatment to people whose identity distinguishes them as associated with the local history and tradition<sup>14</sup>. Clearly, this adds another dynamic for creating a culturally closed milieu, which human capital generally avoids.

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<sup>14</sup> This reasoning is consistent with Veblen's (1973) rural-urban distinction through consumption, suggesting cities experience more distinction through consumption of cultural goods than the rural areas.

### Appendix 3: Available Variables

	Definition	Source	Sampling Frame
gini	Gini index calculated at the household level (homogeneity in the distribution of household net income)	Istat	European Union Statistics on Income and Living Conditions (EU-SILC) ( <a href="http://siqua.istat.it/SIQual/visualizza.do?id=5000170&amp;refresh=true&amp;language=EN">http://siqua.istat.it/SIQual/visualizza.do?id=5000170&amp;refresh=true&amp;language=EN</a> - Retrieved on 13 August 2020)
blood donation	Blood donations per 1000 inhabitants on population 6 years and +	Avis and Istat (our elaborations)	The indicators are calculated on data from the "Associazione Volontari Italiani del Sangue" (Italian Blood Volunteers Association) on the population of each region estimated annually by
blood donors	Blood donors per 1000 inhabitants on population 6 years and +	Avis and Istat (our elaborations)	
cinema	People aged 6 years and + who, at least once in the last year, went to cinema (for 100 people with the same characteristics)	Istat	
museum	People aged 6 years and + who, at least once in the last year, visited a museum and/or exhibition (for 100 people with the same characteristics)	Istat	
theatre	People aged 6 years and + who, at least once in the last year, went to the theatre (for 100 people with the same characteristics)	Istat	
class	People aged 6 years and + who, at least once in the last year, attended a classical music concert (for 100 people with the same characteristics)	Istat	
concert	People aged 6 years and + who, at least once in the last year, attended a music concert of other type (for 100 people with the same characteristics)	Istat	
sport	People aged 6 years and + who, at least once in the last year, attended sports shows (for 100 people with the same characteristics)	Istat	Data from the annually "Multipurpose survey on households: aspects of daily life" ( <a href="http://siqua.istat.it/SIQual/visualizza.do?id=0058000&amp;refresh=true&amp;language=EN">http://siqua.istat.it/SIQual/visualizza.do?id=0058000&amp;refresh=true&amp;language=EN</a> - Retrieved on 13 August 2020)
disco	People aged 6 years and + who, at least once in the last year, went to the disco (for 100 people with the same characteristics)	Istat	
archeology	People aged 6 years and + who, at least once in the last year, visited archaeological sites and monuments (for 100 people with the same characteristics)	Istat	
ecology	People aged 14 years and + who have attended meetings in ecological associations, for civil rights, for peace in the last 12 months (on 100 people with the same characteristics)	Istat	
donations	People aged 14 years and + who have donated money to an association in the last 12 months (on 100 people with the same characteristics)	Istat	
volunteers	Persons aged 14 and + who have volunteered on the total population of 14 years and + (%)	Istat	
religious	People aged 6 years and + who attended a place of worship at least once a week in the last year (for 100 people with the same characteristics)	Istat	
public spending	Percentage of social protection expenditure on the total expenditure of the public administration (constant 2010 values)	Istat (our elaborations)	Our elaborations on Istat data "Regional accounts: Final consumption expenditure of general government"
living culture (f1)	Living culture is based on: SPORT, CONCERT, DISCO, CLASS, THEATRE		Authors' elaborations
social capital (f2)	Social capital is based on: public spending, CINEMA, DONAT, VOLUNT		Authors' elaborations
altruism (f3)	Altruism is based on: blood donation, BLOOD2		Authors' elaborations
cultural heritage (f4)	Cultural heritage is based on: ARCH, MUSEUM, RELIG		Authors' elaborations
share tertiary educated	Population aged 25-64 with tertiary education (levels 5-8 ISCED 2011, %)	Eurostat	Population by educational attainment level - EU Labour Force Survey data (EU-LFS) ( <a href="https://ec.europa.eu/eurostat/cache/metadata/en/edat1_esms.htm">https://ec.europa.eu/eurostat/cache/metadata/en/edat1_esms.htm</a> - Retrieved on 13 August 2020)
ratio_r_g	Calculated by authors from the rate of return on investment in a region divided by the growth rate in that region.	Eurostat	Regional economic accounts ( <a href="https://ec.europa.eu/eurostat/cache/metadata/en/reg_eco10_esms.htm">https://ec.europa.eu/eurostat/cache/metadata/en/reg_eco10_esms.htm</a> - Retrieved on 13 August 2020)
share1to34	This variable is calculated by authors from population by age and sex at NUTS 2 region.	Eurostat	Demographic balance and crude rates at regional level - Unified Demography (Unidemo) project ( <a href="https://ec.europa.eu/eurostat/cache/metadata/en/demo_r_gind3_esms.htm">https://ec.europa.eu/eurostat/cache/metadata/en/demo_r_gind3_esms.htm</a> - Retrieved on 13 August 2020)
urban	Urbanized area (square kilometers)	OECD	
female employment	Female employment rate (15-64 years, %)	Istat	Labour force survey ( <a href="http://siqua.istat.it/SIQual/lang.do?language=UK">http://siqua.istat.it/SIQual/lang.do?language=UK</a> - Retrieved on 13 August 2020)
population	Resident population	Eurostat	Demographic balance and crude rates at regional level - Unified Demography (Unidemo) project ( <a href="https://ec.europa.eu/eurostat/cache/metadata/en/demo_r_gind3_esms.htm">https://ec.europa.eu/eurostat/cache/metadata/en/demo_r_gind3_esms.htm</a> - Retrieved on 13 August 2020)
emp_public	Employment in public administration, defence, education, human health and social work activities (thousands)	Eurostat	
emp_agri	Employment in agriculture, forestry and fishing (thousands)	Eurostat	Regional labour market statistics - EU Labour Force Survey (EU-LFS)
emp_indus	Employment in industry (except construction) (thousands)	Eurostat	
emp_const	Employment in construction (thousands)	Eurostat	( <a href="https://ec.europa.eu/eurostat/cache/metadata/en/reg_lm_esms.htm">https://ec.europa.eu/eurostat/cache/metadata/en/reg_lm_esms.htm</a> - Retrieved on 13 August 2020)
emp_serv1	Employment in wholesale and retail trade, transport, accommodation and food service activities (thousands)	Eurostat	
emp_serv2	Employment in professional, scientific and technical activities; administrative and support service activities (thousands)	Eurostat	

Note: <sup>a</sup> Italian association of voluntary blood donors

### Appendix 4: Motivation of the Used Proxies for Cultural Capital

Variable	Definition	Behavioural Meaning	Equivalent to component in:		Motivation from the Literature	Impact on inequality	Why this impact?
			In CBD definition of Cultural Capital	In Bourdieu's original definition of Cultural Capital			
<i>national cultural institutes</i>	<i>number of national cultural institutes of antiquities and art</i>	<i>actual endowment with stock of inherited value</i>	CH (material)	<i>inherited from parents</i>	<i>Bourdieu, P. (2005). The social structures of the economy. Polity.; Tweed, C., Sutherland, M. (2007). Built cultural heritage and sustainable urban development. Landscape and urban planning, 83(1), 62-69.</i>	<i>increases</i>	<i>generates social closure based on CH distinction</i>
<i>public spending</i>	<i>euros of public spending</i>	<i>actual monetarized commitment to redistribution values</i>	LC (material)	<i>personal art engagement</i>	<i>Bourdieu, P. (2005). The social structures of the economy. Polity.</i>	<i>decreases</i>	<i>generates pro-altruistic social capital of cooperation and support to any identity</i>
<i>theatre</i>	<i>theater-goers</i>	<i>personally constructed value through engaging with activity that allows for cultural distinction through art consumption</i>	LC (immaterial)	<i>personal art engagement</i>	<i>Bourdieu, P. (1996). The rules of art: Genesis and structure of the literary field. Stanford University Press. Fowler, B. (1997). Pierre Bourdieu and cultural theory: Critical investigations. Sage.</i>	<i>increases</i>	<i>generates social closure based on CH distinction</i>
<i>cinema</i>	<i>cinema-goers</i>	<i>personally constructed value through engaging with activity that allows for cultural distinction through art consumption</i>	LC (immaterial)	<i>personal art engagement</i>	<i>Bourdieu, P., Whiteside, S. (1996). Photography: A middle-brow art. Stanford University Press.</i>	<i>decreases</i>	<i>generates pro-altruistic social capital of cooperation and support to any identity</i>
<i>museums</i>	<i>museum-visitors</i>	<i>showing propensity towards affinity to inherited cultural values installed in the exhibits in the museum</i>	CH (immaterial)	<i>inherited from parents</i>	<i>Dicks, B. (2016). The Habitus of Heritage: a Discussion of Bourdieu's Ideas for Visitor Studies in Heritage and Museums. Museum and Society, 14(1), 52-64.</i>	<i>increases</i>	<i>generates social closure based on CH distinction</i>
<i>classic</i>	<i>classic-music concert-goers</i>	<i>showing propensity towards affinity to inherited cultural values related to inherited forms of music</i>	CH (immaterial)	<i>inherited from parents</i>	<i>Bourdieu, P. (1996). The rules of art: Genesis and structure of the literary field. Stanford University Press. Fowler, B. (1997). Pierre Bourdieu and cultural theory: Critical investigations. Sage.</i>	<i>increases</i>	<i>generates social closure based on CH distinction</i>
<i>concert</i>	<i>other-art-event-goers</i>	<i>personally constructed value through engaging with activity that allows for new musical values and tastes</i>	LC (immaterial)	<i>personal art engagement</i>	<i>Bourdieu, P., Whiteside, S. (1996). Photography: A middle-brow art. Stanford University Press.</i>	<i>decreases</i>	<i>generates pro-altruistic social capital of cooperation and support to any identity</i>

Variable	Definition	Behavioural Meaning	Equivalent to component in:		Motivation from the Literature	Impact on inequality	Why this impact?
			In CBD definition of Cultural Capital	In Bourdieu's original definition of Cultural Capital			
sport	sport-goers	personally constructed value associated with fairplay and sportsmanship	LC (immaterial)	personal art engagement	Bourdieu, P. (1991). <i>Sport and social class. Rethinking popular culture: Contemporary perspectives in cultural studies</i> , 357-373. Tomlinson, A. (2004). <i>Pierre Bourdieu and the sociological study of sport: Habitus, capital and field. In Sport and modern social theorists</i> (pp. 161-172). Palgrave Macmillan, London. Laberge, S., & Kay, J. (2002). <i>Pierre Bourdieu's sociocultural theory and sport practice. Theory, sport and society</i> , 10, 239-266.	decreases	generates pro-altruistic social capital of cooperation and support to any identity
disco	disco-goers	personally constructed value through engaging with activity that allows for socialization with others	LC (immaterial)	personal art engagement	Baumann, G. (1990). <i>The Re-Invention of bhangra. Social change and aesthetic shifts in a Punjabi music in Britain. The World of Music</i> , 32(2), 81-98. Hesmondhalgh, D. (1998). <i>Club Culture Goes Mental. Popular Music</i> 17(2): 247-253.	decreases	generates pro-altruistic social capital of cooperation and support to any identity
archeology	archeological-sites-visitors	showing propensity towards affinity to inherited cultural values related to inherited past and history	CH (immaterial)	inherited from parents	Dicks, B. (2016). <i>The Habitus of Heritage: a Discussion of Bourdieu's Ideas for Visitor Studies in Heritage and Museums. Museum and Society</i> , 14(1), 52-64.	increases	generates social closure based on CH distinction
ecology	ecological issues activists	personally constructed value through engaging with activity that allows public good concerns (showing redistribution mindedness)	LC (immaterial)	personal art engagement	Karol, J., Gale, T. (2004). <i>Bourdieu's social theory and sustainability: What is 'environmental capital'. Australian Association for Research in Education.</i>	decreases	generates pro-altruistic social capital of cooperation and support to any identity
donation	blood donation per people	actual materialization of intention to help others (pro-altruistic, pro-social values)	LC (material)	personal art engagement	Ungureanu, C. (2013). <i>Bourdieu and Derrida on gift: Beyond "Double Truth" and paradox. Human Studies</i> , 36(3), 393-409. Busby, H., Tutton, R., & Corrigan, O. P. (2004). <i>Blood donation for genetic research. Genetic databases: Socio-ethical issues in the collection and use of DNA</i> , 39-54.	decreases	generates pro-altruistic social capital of cooperation and support to any identity
volunteers	people who do volunteering activities	actual time and effort spent on helping others (pro-altruistic, pro-social values)	LC (material)	personal art engagement	Siisiainen, M. (2003). <i>Two concepts of social capital: Bourdieu vs. Putnam. International Journal of Contemporary Sociology</i> , 40(2), 183-204. Dean, J. (2016). <i>Class diversity and youth volunteering in the United Kingdom: Applying Bourdieu's habitus and cultural capital. Nonprofit and Voluntary Sector Quarterly</i> , 45(1_suppl), 95S-113S. Janoski, T., Musick, M., & Wilson, J. (1998, September). <i>Being volunteered? The impact of social participation and pro-social attitudes on volunteering. In Sociological forum</i> (Vol. 13, No. 3, pp. 495-519). Kluwer Academic Publishers-Plenum Publishers.	decreases	generates pro-altruistic social capital of cooperation and support to any identity
religious	weekly religious service goers	showing affinity to spiritual values inherited from the past	CH (immaterial)	inherited from parents	Rey, T. (2014). <i>Bourdieu on religion: Imposing faith and legitimacy. Routledge.</i> Rey, T. (2004). "Marketing the goods of salvation: Bourdieu on religion." <i>Religion</i> 34, no. 4 (2004): 331-343. Dianteuill, E. (2004). <i>Pierre Bourdieu and the sociology of religion: A central and peripheral concern. In After Bourdieu</i> (pp. 65-85). Springer, Dordrecht.	increases	generates social closure based on CH distinction



**Table 1: Descriptive Statistics**

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<i>gini</i>	200	0.31	0.03	0.26	0.40
<i>blood donation</i>	200	36.76	17.26	9.41	70.07
<i>cinema</i>	200	48.43	4.99	33.4	61.8
<i>museum</i>	200	29.67	8.17	14.8	49
<i>religious</i>	200	29.60	6.55	17.2	43.8
<i>living culture (f1)</i>	200	9.39E-09	1	-1.69	3.96
<i>social capital (f2)</i>	200	-1.13E-08	1	-1.97	2.48
<i>altrusim (f3)</i>	200	9.50E-09	1	-2.37	1.91
<i>cultural heritage (f4)</i>	200	1.26E-08	1	-2.29	2.5
<i>share tertiary educated</i>	200	15.58	2.63	10.8	23.3
<i>ratio_r_g</i>	179	0.51	13.08	-86.90	47.77
<i>share1to34</i>	200	0.35	0.03	0.28	0.44
<i>urban</i>	130	394.08	327.02	63	1116
<i>female employment</i>	200	47.60	11.62	25.41	62.68
<i>population</i>	200	2953584	2427984	124654	1.00E+07
<i>emp_public</i>	200	225.57	175.96	14.70	706.40
<i>emp_agri</i>	200	38.53	30.16	1.60	113
<i>emp_indus</i>	200	226.33	261.62	5.4	1149.5
<i>emp_const</i>	200	83.28	71.50	4.9	334.4
<i>emp_serv1</i>	200	270.21	228.13	12.9	965.2
<i>emp_serv2</i>	200	110.23	107.91	4.6	503.3

*Note: Main descriptive statistics for all mono-dimensional variables in our dataset.*

*Source: Authors'*

**Table 2a: Pairwise T-test for the Mono-dimensional Proxies for Cultural Capital**

<b>Pairwise ttest - Ha: mean(diff) != 0</b>				
	<i>blood donation</i>	<i>cinema</i>	<i>museum</i>	<i>religious</i>
<i>blood donation</i>	-	Pr( T  >  t ) = 0.0000	Pr( T  >  t ) = 0.0000	Pr( T  >  t ) = 0.0000
<i>cinema</i>	Pr( T  >  t ) = 0.0000	-	Pr( T  >  t ) = 0.0000	Pr( T  >  t ) = 0.0000
<i>museum</i>	Pr( T  >  t ) = 0.0000	Pr( T  >  t ) = 0.0000	-	Pr( T  >  t ) = 0.9309
<i>religious</i>	Pr( T  >  t ) = 0.0000	Pr( T  >  t ) = 0.0000	Pr( T  >  t ) = 0.9309	-

Note: The pairwise t-tests demonstrate the degree of independent information contained in the mono-dimensional proxies for culture.

Source: Authors'

**Table 2b: Factor Analysis – Cultural Capital**

<b>Variable</b>	<i>living culture (f1)</i>	<i>social capital (f2)</i>	<i>altruism (f3)</i>	<i>cultural heritage (f4)</i>
<i>national cultural institutes</i>	0.03	-0.07	-0.16	-0.13
<i>public spending</i>	0.04	0.26	-0.19	-0.11
<i>theatre</i>	0.22	0.06	-0.11	-0.09
<i>cinema</i>	-0.07	0.19	-0.20	0.10
<i>museum</i>	0.05	-0.01	-0.03	0.40
<i>class</i>	0.20	0.02	-0.01	0.01
<i>concert</i>	0.26	-0.07	0.05	-0.17
<i>sport</i>	0.21	-0.07	0.04	-0.01
<i>disco</i>	0.23	0.01	0.04	-0.21
<i>archeology</i>	-0.05	0.00	-0.03	0.55
<i>ecology</i>	-0.09	0.18	0.08	0.19
<i>donations</i>	-0.01	0.25	0.07	-0.04
<i>blood donors</i>	-0.01	-0.02	0.35	-0.01
<i>blood donations</i>	0.02	0.00	0.34	-0.05
<i>volunteers</i>	-0.05	0.23	0.09	0.09
<i>religious</i>	-0.15	-0.19	0.10	0.43

Note: Factor loadings demonstrate that our available 16 cultural proxies group into four main factor variables, labelled respectively: living culture, social capital, altruism and cultural heritage.

Source: Authors'

**Table 3: Pooled Cross Section with Region and Year Fixed Effects**

Specification		Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5
		three human-factor capitals - reduced	three human- factor capitals	three human- factor capitals & interactions	three human- factor capitals & interactions - NORTH	three human- factor capitals & interactions - SOUTH
dep. var.		GINI				
		coef.	coef.	coef.	coef.	coef.
cultural capital	<i>living culture (f1)</i>	0.0032	-0.0016	0.0220	0.0186	0.2943 ***
	<i>altrusim (f3)</i>	0.0149 *	0.0256 **	0.0136	0.0078	0.1971 ***
	<i>cultural heritage (f4)</i>	0.0065 *	0.0087 *	0.0353 **	0.0133	-0.1661 ***
social capital	<i>social capital (f2)</i>	0.0050	0.0077	0.0673 **	0.0933 **	-0.1910 ***
human capital	<i>tertiary_educated</i>	-0.0038 **	-0.0012	-0.0007	-0.0005	-0.0306 ***
interactions: cultural capital & human capital	<i>inter_f1_tertiary educated</i>	-	-	-0.0015	-0.0015	-0.0250 ***
	<i>inter_f3_tertiary educated</i>	-	-	0.0003	-0.0003	-0.0062 ***
	<i>inter_f4_tertiary educated</i>	-	-	-0.0018 *	-0.0008	0.0157 ***
interactions: cultural capital & social capital	<i>inter_social capital (f2)_f1</i>	-	-	0.0055	0.0066	-0.0147 ***
	<i>inter_social capital (f2)_f3</i>	-	-	0.0002	0.0007	-0.0312 ***
	<i>inter_social capital (f2)_f4</i>	-	-	-0.0111 ***	-0.0107 **	-0.0214 ***
interaction: social capital & human capital	<i>inter_f2_tertiary educated</i>	-	-	-0.0036 *	-0.0051 *	0.0186 ***
Piketty's ratio (r/g)	<i>ratio1_r_g</i>	0.0002 *	0.0002	0.0002	-3.1E-05	0.0004 ***
X (control variables)	<i>share youth (1 -34 yrs)</i>	-	-0.2420	0.0460	-0.6385	8.4157 ***
	<i>urban land (sq km)</i>	-	-0.0003	-0.0001	0.0002	-0.0003
	<i>female employment rate</i>	-	-0.0037 *	-0.0035 *	-0.0032	0.0146 ***
	<i>population</i>	-	3.57E-09	7.48E-09	2.03E-08	4.81E-09
	<i>empl. - public sector</i>	-	-5.2E-05	-0.0001	-0.0002	0.0012 ***
	<i>empl. - agricultural sector</i>	-	0.0003	0.0007 *	0.0009 **	-0.0012 ***
	<i>empl. - industrial sector</i>	-	0.0002	1.39E-06	2.59E-05	-0.0004 *
	<i>empl. - construction sector</i>	-	-7.1E-05	1.81E-06	0.0001	0.0002
	<i>empl. - retail sector</i>	-	0.0001	3.06E-05	-6.1E-05	-0.0004 ***
	<i>empl. - professional sector</i>	-	-4.1E-05	-1.6E-05	-6.88E-06	-0.0010 *
FE	<i>year</i>	YES	YES	YES	YES	YES
	<i>region</i>	YES	YES	YES	YES	YES
constant	<i>_cons</i>	0.333 ***	0.569 ***	0.466 ***	0.544	-3.04682 ***
F		(33, 145) = 19.34	(35, 80) = 14.32	(42, 73) = 14.45	(38, 42) = 8.46	(33, 1) = 422.43
Prob > F		0.0000	0.0000	0.0000	0.0000	0.0385
R-squared		0.8149	0.8624	0.8926	0.8845	0.9999
N		179	116	116	81	35

Note: The five specifications explore the effect from cultural capital, social capital and human capital and their interaction, first across the whole country (Spec1 to Spec3), and then separately in North and South Italy (respectively Spec4 and Spec5). The stars represent levels of statistical significance, as follows: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

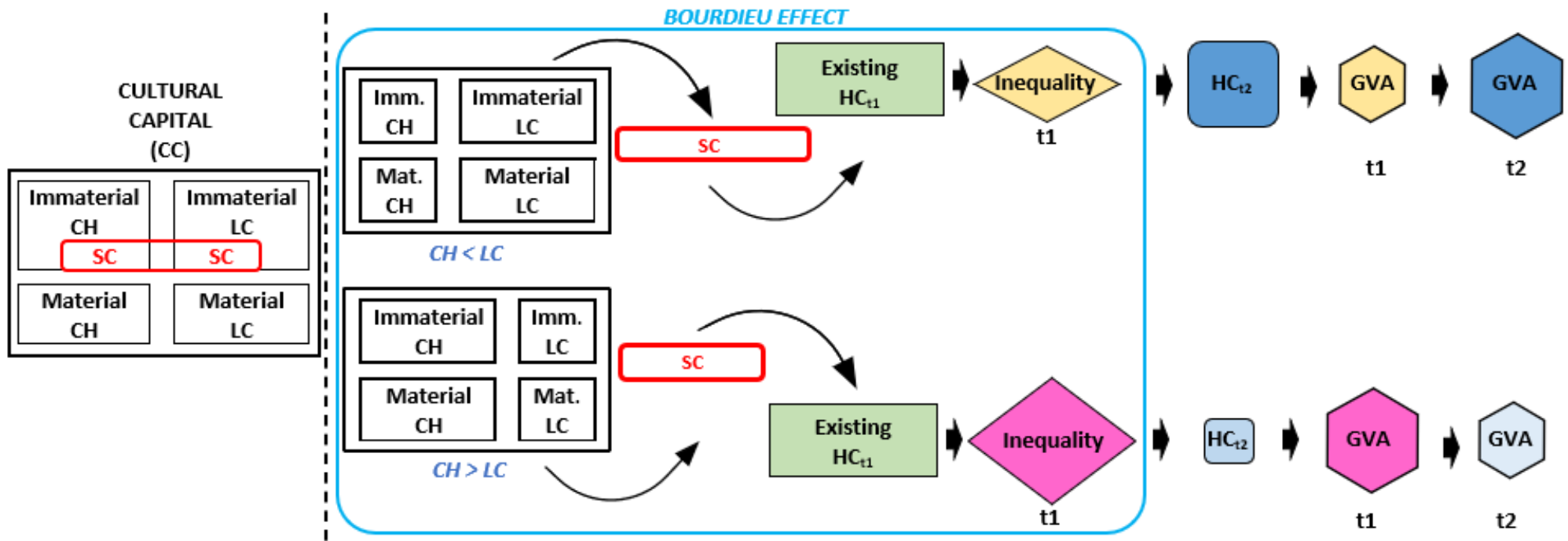
Source: Authors'

**Table 4: Finite Mixture Model – Two versus Three Main Homogenous Groups**

dep. var.	Two Clusters			GINI	Three Cluster		
	coef.	coef.			coef.	coef.	
<b>cultural capital</b>	<i>living culture (f1)</i>	0.0004	-0.001		-0.001	-0.006 ***	-0.002
	<i>altrusim (f3)</i>	0.005	0.014 **		0.0004	0.012 ***	0.007
	<i>cultural heritage (f4)</i>	0.002	0.004 *		0.001	-0.002	0.006 **
<b>social capital</b>	<i>social capital (f2)</i>	0.013 **	0.003		0.016 **	0.002	0.001
<b>human capital</b>	<i>tertiary_educated</i>	-0.008 ***	-0.0003		-0.007 ***	-0.001	-0.001
<b>Piketty's ratio (r/g)</b>	<i>ratio1_r_g</i>	0.0001	0.0001		-0.00005	-0.0003	0.0001
Time dummies	YES	YES		YES	YES	YES	YES
Observations	200	200		200	200	200	200
R-squared	0.19	0.16		0.18	0.01	0.17	

*Note: The table presents a finite mixture model (FMM) estimation with human capital in the configuration of estimating respectively two and three main homogenous groups. The stars represent levels of statistical significance, as follows: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .*

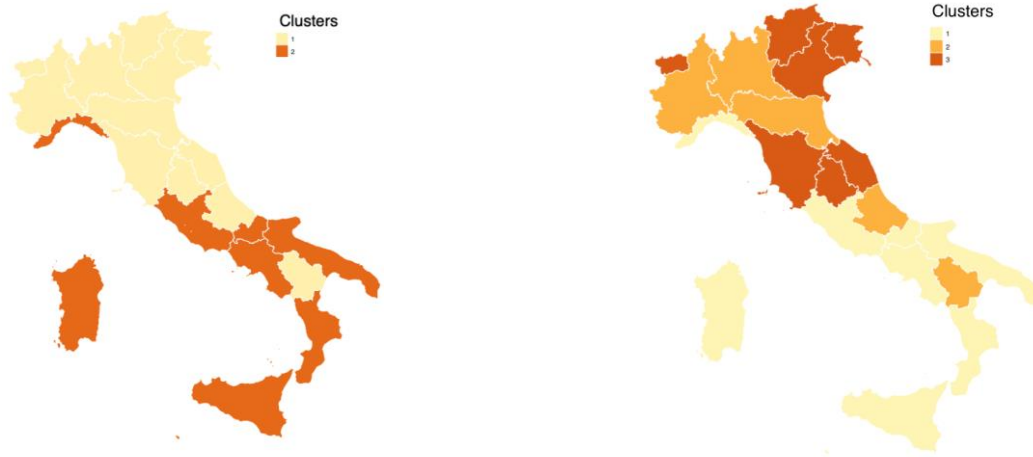
*Source: Authors'*



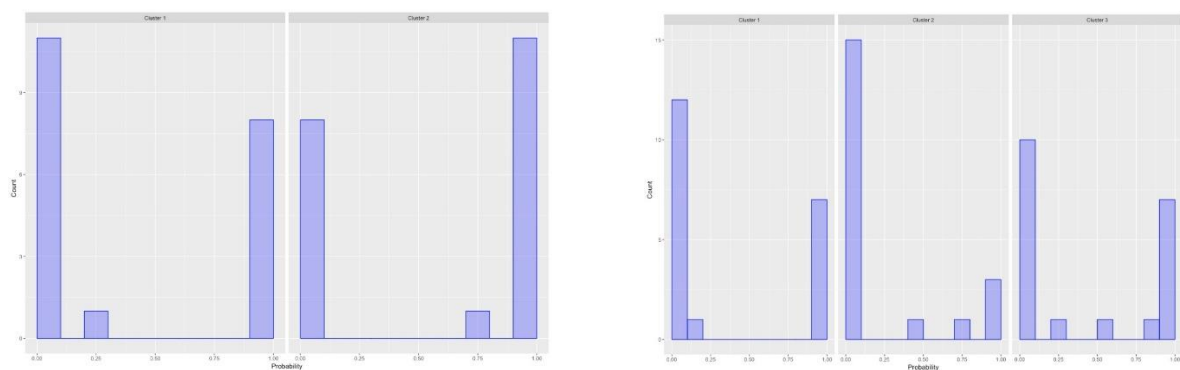
**Figure 1: CBD definition of Cultural Capital and the Bourdieu Effect of Culture-Based Spatial Frictions**

The figure presents a visualization of the CBD definition of cultural capital (CC), its relationship with social capital (SC) and human capital (HC) and its ultimate effect on inequality, which defines what we call the 'Bourdieu Effect'. CBD defines CC as a local capital composed of material and immaterial forms (i.e. assets versus attitudes and beliefs), each temporally delineated into two types: cultural heritage (CH) and living culture (LC). SC can be considered as part of the attitudes inherited and currently practiced in living culture, but it can have an important dynamics of its own, generating interaction and moderation effect on the rest of CC. Therefore, SC and CC have to be studied as two separated entities. The volume (stock) of  $(CC - SC)$  determines the magnitude of the effect from CC. If  $CH > LC$  in this stock, then SC is inclined towards creating a social closure related to distinction through belonging to the local CH. If  $CH < LC$  in this stock of CC, then SC is more pro-altruistically open to cooperation with any human being, local or newcomer. Thus, given the same HC in time period  $t_1$ , the interaction between SC and CC will generate less inequality when  $CH < LC$  as people will allow for more equal internal redistribution of socio-economic resources, not only for a specially CH-distinguished group. Furthermore, in the long run, at time period  $t_2$  the region where  $CH > LC$  will become so unequal that it will turn less attractive for moving HC. Thus, HC will decrease in this region and will move towards places where  $CH < LC$ . Clearly, according to Rossi-Hansberg and Wright (2007), this redistribution of HC will lead to redistribution of GVA as well. In short, Fig. 1 depicts the Bourdieu Effect as a mechanism of creating culture-based spatial frictions i.e. culture-related impediments for the reallocation of human capital in space due to the variation in the nature of cultural capital across space (in terms of the balance between cultural heritage and living culture accumulated in places).

Source: Authors'



**Figure 2a: Two versus Three Main Homogenous Groups of Income Inequality across Italy (accounting for Human Capital in the grouping).**



**Figure 2b: Probability of Belonging to a Cluster in a Two versus Three Groups.**