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DOES RELATED VARIETY MATTER FOR CREATIVE EMPLOYMENT GROWTH?

1. INTRODUCTION

Human creativity has been largely acknowledged as a powerful engine in driving economic growth. This perspective has been extensively developed in Richard Florida's seminal contribution *The Rise of The Creative Class* (2002), where urban growth has been mostly related to the capability of cities of cultivating and attracting creative and talented workers. Nevertheless, the «creativity debate» has increasingly run aground by being couched in terms of an either/or choice: on the one hand, an unquestioned faith in a «high-road path to sustainable prosperity» (FLORIDA, 2002); on the other, the general fear of a growing supremacy of «interurban competition, gentrification, middle-class consumption and place marketing» (PECK, 2005) against redistributive spending and social programming. The more the debate lingers, the more irreconcilable and hardened these conflicting views are likely to become.

Florida's fuzzy definition of creative class (MARKUSEN, 2006) is, indeed, one of the main shortcomings of his theory and pushes the concept of creativity away from its original field of application, thus allowing for a number of potential misinterpretations: what do we actually mean by «creative class»? How can we reasonably claim that a causal logic may exist in the relationship between creativity and economic growth? While scholars have been engaging with «creativity» in terms of human factor and its creative habitat for quite some time, little attention has been recently paid on «creative industries», and specifically on «core cultural activities» and their role for local economic development. There is a growing consensus, indeed, that specific strengths in the creative industries area may allow local economies to gain a competitive advantage at a broader socioeconomic level, in terms of innovation production and cross-sectorial knowledge transfer (RUTTEN, MARLET and VAN OORT, 2011). Then, rather than investigating the residential choices of high-skilled creative workers, we should focus on the reasons why creative industries flourish in specific places and not in others. It is precisely this kind of analysis that is of particular interest here and sets the framework for a potential reconciliation attempt between conflicting visions of creativity.

Most notably, creative industries seem to have been denied, so far, a prominent role in the intense debate about the impact of localization or urbanization economies on innovation and growth, which is usually referred to as «Marshall vs. Jacobs' externalities». Recently (FRENKEN, VAN OORT and VERBURG, 2007; BOSCHMA and IAMMARINO, 2009), a more accurate definition of «Jacobs externalities» has been proposed, which distinguishes between «related variety», which occurs when there are complementarities among sectors in terms of shared competences, and «unrelated variety», which covers sectors that do not share complementary competences. BOSCHMA and IAMMARINO (*ibidem*) gathered strong evidences about the influence of different kinds of variety for manufacturing industries, but a similar contribution for the cultural and intellectual activities is still missing. We follow up with their methodological approach to help filling this gap.

The research question underlying the analysis is roughly the following: do creative industries, in terms of employment growth, benefit from variety? I have tried to answer this question by focusing on a small number of creative activities, selecting five three-digit groups within the NACE Rev. 2 system: cinema (JA591), music (JA592), photography (MC742), art (RR900) and cultural activities (RR910). The main hypothesis underlying the analysis is that higher levels of related variety within creative industries determine more pronounced local creative employment growth. But I also wanted to test if unrelated variety plays any role in this scenario, as one might expect, given its *portfolio effect* for the whole economy, especially during recessions (FRENKEN, VAN OORT and VERBURG, 2007). This is why I set the time frame of the analysis to the outbreak of the last economic crisis (2008-2010).

The paper is divided into four parts. After this introduction, Section 2 gives a quick overview of the two streams of literature respectively referring to the creative industry's debate (Section 2.1) and

the Jacobs vs. Marshallian externalities (Section 2.2). In the further sections I will briefly discuss the methodological approaches undertaken in the evaluation of the influence of related and unrelated variety on employment dynamics, I will present the data collected, the empirical model and the econometric estimations (Section 3), with some final comments (Section 4).

2. Theoretical framework

2.1. The rise of the creative industry

As is well known, the emergence of a new phase of capitalistic development, which has been typified in terms of «new economy» (Beyers, 2003), «knowledge economy» (Cooke and Piccaluga, 2006), «cognitive capitalism» (Moulier Boutang, 2007), has increasingly blurred the boundaries of what we usually associate with the term «creative activities» and has led to an enormous expansion of jobs that rely upon the diverse cognitive and cultural capacities of workers (Scott, 2011). This is why «creative industry» has gradually become a slippery concept among scholars. The list of activities that fall under this definition has increased dramatically over the years: marketing, advertising, broadcasting, industrial design, interactive leisure software, research and development (Howkins, 2001; Hesmondhalgh, 2002), just to mention a few, they all seem to fulfil the «admission criteria», though a commonly accepted list is still missing. The emergence of this new taxonomy does not pose, *per se*, any threat of ambiguity in our understanding of the phenomenon, but it is likely to jeopardize the way we assess it. A number of preliminary questions arise: can «creative industries» be considered as an evolution of cultural industries or do they significantly diverge from each other? How can we define «core» creative industries as opposed to the «newcomers»? And, eventually, is it still worth assessing them specifically in regional studies and why?

The answer to question one is not straightforward. First of all, the term «creative industry» is relatively recent and it emerged primarily as a policy-related concept (Flew and Cunningham, 2010). The shift from «culture» to «creativity» is emblematic of a new trend in public policy-making that had been moving, since the 1970s, «from a supply-side, artist-centered approach to one that gave stronger consideration to consumer demand and cultural markets» (*ibid.*, p. 120). For the last two decades, as said above, creativity has been increasingly given a central role in the generation of economic growth and cultural policy has started to be perceived «as an essential component in any respectable economic policy-maker's development strategy» (Throsby, 2008, p. 229). Much of the reluctance to consider the terms «creative industry» and «cultural industries» as interchangeable comes from distinctive national traditions and different policy routines in understanding these categories and it may be lessened using a «concentric circles» approach (*ibidem*), «where industries are distinguished by the «core» role given to creativity in the input stage of production» (Flew and Cunningham, 2010, p. 116). For instance, «the visual arts would be seen as a "core", but advertising would be seen as more "peripheral" as it combines creative inputs with other inputs» (*ibidem*). Working definitions of «creative industries» seem to be less problematic. The development of the revised Unesco's *Framework for Cultural Statistics* (Unesco, 2007) provided a major contribution in this direction, endorsing the inclusion of the following sectors into the creative industry: publishing and literature; performing arts; music; film, video and photography; broadcasting (television and radio); visual arts and crafts; advertising; design (including fashion); museums, galleries, and libraries; interactive media (web, games, mobile, etc.). However, other operational definitions provided by national or international bodies like Dcms or Unctad are equally widespread. So, there is no single correct answer to question 2: the line of demarcation between «core» creative industries and «peripheral» ones will shift in relation to specific contexts, methodological approaches and goals pursued. Nevertheless, a specific focus on core creative activities is still needed. One might claim indeed, referring to question 3, that nowadays every job calls for more creativity than in the past and creative industry may simply count as another sector, perhaps the most relevant, but just «one among many» in an increasingly knowledge-based economy. In this guise, «creativity» rather «creative industry» should be the focal point of our analysis and a theoretical approach of that kind is undoubtedly consistent with the well-established literature about the role of human capital on economic growth and long-term prosperity (Uzawa, 1965; Lucas, 1988; Kotkin, 2000; Florida, 2002). But there is a growing consensus that the creative industry *per se* may be seen as a «flywheel» of local economic development (Cooke and Lazzeretti, 2008) and that specific strengths in the creative industries area may allow local economies to gain a competitive advantage at a broader

socioeconomic level, in terms of innovation production and cross-sectorial knowledge transfer (RUTTEN, MARLET and VAN OORT, 2011). It is precisely this kind of analysis that is of particular interest here and sets the framework for the next relevant issue: where do creative industries flourish and why? A complete answer to this question is far beyond the purpose of this study, but a specific aspect would be stressed in the following sections: in which measure do creative industries benefit from variety? And how can we assess it?

2.2. Creative industries and related variety: A missing link

Since MARSHALL's original speculation (1920), localization economies have been related to a wide range of benefits arising from sectorial specialization of a region, which have been typified, most notably, in terms of knowledge spillovers (ARROW, 1962; ROMER, 1987), competitive advantage (PORTER, 1990) or localized learning (MALMBERG and MASKELL, 2006). The flip side of specialization is diversification (ROSENTHAL and STRANGE, 2002): JACOBS (1969) stressed the importance of urban diversity for cross-fertilization of ideas, so we usually make use of the term «Jacobs' externalities» to refer to the benefits arising from a relatively diversified local industrial structure. Both kinds of agglomeration economies seem to play a role for creative industries and various studies have attempted to identify the impact of the geographical concentration of creative industries in terms of generation of Marshall or Jacobs' externalities. Two seminal contributions certainly deserve to be mentioned here. First, the contribution given by the «Californian School of External Economies» to the «New Hollywood» debate, in particular STORPER (1989) and SCOTT (2002). In their analysis, Marshallian localization economies have been reinterpreted in terms of transaction costs' theory, but the sources of those positive externalities were still found among classical Marshallian paradigms, such as labour market pooling and «overlapping production networks» (*ibidem*). Nevertheless, their findings are consistent with the general view that creative industries, at least those highly capitalized and industrialized in their modes of production and distribution (such as film, television, videogame), can benefit from clustering and that, in general, «local buzz» is crucial for creative industry (STORPER and VENABLES, 2004). Even challenging the traditional concept of the Marshallian district and adopting an evolutionary perspective on interfirm networks formation in creative industry, evidences have been gathered that clusters still represent a crucial space of potential interaction between similar firms as their industry evolves (for videogame industry see BALLAND, DE VAAN and BOSCHMA, 2013). On the other hand, it is well known that creative industries necessitate a variegated (or diversified) environment to flourish and some scholars highlighted how variety and urban diversity matter for innovation and knowledge transfer. This perspective has been extensively stressed in the *human capital* debate and finds in Richard FLORIDA's *The Rise of The Creative Class* (2002) its most appealing formulation. Even if Florida shifts the focus from the «creative industries» to the human factor and its creative habitat (LAZZERETTI, CAPONE and BOIX, 2012), he undoubtedly succeeds in explaining why some places become poles of attraction for the creative «class» and consequently experience high rates of concentration of creative activities. That is saying, in a nutshell, that the more «variegated» is the creative environment of a place, the more vibrant is the potential cross-fertilization between related activities. But what kind of «variety» does matter? Recently (FRENKEN, VAN OORT and VERBURG, 2007; BOSCHMA and IAMMARINO, 2009), a more accurate definition of «Jacobs' externalities» has been proposed, that distinguishes between «related variety», which occurs when there are complementarities among sectors in terms of shared competences, and «unrelated variety», which covers sectors that do not share complementary competences. While the former is likely to account for the generation of those inter-sectorial knowledge spillovers formerly known as Jacobs' externalities, the latter can be interpreted in terms of *portfolio effect*, that is the capability of a local economy to absorb sector-specific shocks and thus dampen the detrimental effects of the crisis for the whole economy (BOSCHMA and IAMMARINO, 2009). Related variety seems to fit better the idea that knowledge can actually spill over from one firm to another: any knowledge transfer, in this guise, is likely to occur only when there is a real interaction potential between the two firms. And this is quite straightforward. Paraphrasing BOSCHMA and IAMMARINO (*ibid.*, p. 292): «It is unclear what a pig farmer can learn from a microchip company even though they are neighbours». So a certain degree of «cognitive proximity» (BOSCHMA, 2005) is needed, but not too much: risks of cognitive lock-ins might counter-balance, indeed, the beneficial effects generated by specialization. Little attention has also been paid to the dynamics of extra-regional knowledge spillovers, in terms of incoming flows of new knowledge in the region that may arise through different channels: IDEs, trade linkages, global

production chains, etc. (BOSCHMA and IAMMARINO, 2009). Similar remarks apply there: a region may benefit from the inflow of external knowledge if it is neither too distant (lacking absorptive capacity) nor too close (risks of crowding-out) to the regional knowledge base. Strong evidence has been gathered about the influence of different kinds of variety for manufacturing activities, but very few studies try to assess it for the creative industry. The analysis carried out in this paper starts from this final remark.

2.3. Research questions

The purpose of the present work was to examine the impact of related and unrelated variety on creative employment dynamics in Italian provinces (NUTS3) during the outbreak of the economic crisis (2008-2010). The main hypothesis underlying the analysis is that well-diversified and interdependent creative industries determine higher local employment growth rates. However, I claim that the post-2008 economic turbulence was likely to be less harsh for provinces characterized by a high degree of unrelated variety, so that the unemployment rates are generally expected to be more favourable for those provinces. We can summarize the previous statements in the following formulation:

Hypothesis A: Related variety within creative industry has a direct and positive effect on its employment growth.

Hypothesis B: Unrelated variety within all industries has an indirect and positive effect on creative employment growth is so far as it allows local economies to absorb sector-specific shocks and dampen the detrimental effects of the crisis for the whole economy, including creative industry.

In line with BOSCHMA and IAMMARINO (2009), I made use of the provincial trade profiles in order to estimate the sectorial composition of the provinces. This methodological approach allows us to simultaneously test if relatedness between the flows of knowledge brought in the province (imports) and the existent knowledge base (exports) affects positively provincial creative employment. So, the last hypothesis can be formulated as below:

Hypothesis C: Imports' relatedness with the provincial knowledge base has a direct and positive effect on creative employment growth.

The study attempts to underpin these hypotheses with empirical evidence.

3. THE EMPIRICAL ANALYSIS

3.1. The analytical framework

The relation between creative industries' growth and the amount of related variety occurring at provincial level is the main aim of this study. As I pointed above, I made use of the provincial trade profiles in terms of both export and import diversification within the creative industry. The generic assumption is that export profile can usefully reflect the sectorial composition of local economy, whereas imports data can account for the inflow of extra-local knowledge, both related and unrelated, that may be turned into growing opportunities.

Following FRENKEN, VAN OORT and VERBURG (2007), variety has been estimated in terms of entropy index whose value increases the more diversified the export/import profile of a province is. The use of trade data to estimate entropy indexes follows the approach by BOSCHMA and IAMMARINO (2009) and the analytical framework has been set accordingly. Nevertheless, the peculiarity of the creative industries is not fully compatible with the traditional way relatedness is computed, that is the amount of entropy occurring within a group of three-digits industries sharing the same two-digits. The source of this methodological shortcoming can be traced in the way international industrial classifications (in this case, NACE Rev. 2) have been developed, which are such that creative activities are distributed within a large and composite group of two-digit sectors. Therefore, a strong relatedness between a pair of three-digit industries sharing the same two-digits is often missing (e.g. «photography» shares the same two-digits with «legal activities»). These limitations are less stringent for manufacturing industries. So I adopted a different approach: I endorsed the UNESCO's definition of creative industry and measured the amount of relatedness

between the industries belonging to this peculiar category. In this way, we can properly assess the magnitude of the cross-fertilization occurring between different creative activities.

Then, with regard to the indicators, exports' entropy at three-digit level as been assumed to measure the degree of *related variety* within the creative industry in a given province. This index is computed with the following formulation:

$$VARIETY = \sum_{i=1}^{N} p_i \log_2 \left(\frac{1}{p_i}\right)$$

where p_i stands for the share of exports of a specific three-digit activity within the creative industry.

The economic meaning is quite straightforward: the more diversified creative industries within a given province are in terms of export profile, the higher is the probability that positive cross-sectorial externalities will occur among them and, consequently, the more the province will benefit from them in terms of creative employment growth (if hypothesis one is true).

Unrelated variety has been estimated in terms of entropy measure at one-digit level for all the industries within a given province. As I pointed out earlier, I expected that high levels of unrelated variety could have a positive, though indirect effect on creative employment. The formulation is then the following:

$$UNRVAR = \sum_{i=1}^{N} S_i \log_2 \left(\frac{1}{S_i}\right)$$

where S_i stands for the share of exports of a one-digit industry within the whole provincial economy.

With regard to import data, I provided two kinds of indicator:

– *Import variety* which reflects the entropy measure at three-digit level within a given provincial import profile and has been calculated as below:

$$IMPVAR = \sum_{i=1}^{N} k_i \log_2 \left(\frac{1}{k_i}\right)$$

where k_i stands for the share of imports of a specific three-digit activity within the creative industry.

The assumption is that highly diversified inflows of extra-provincial knowledge, by means of imports variety, are positively correlated with creative employment within a given province, in so far as they are likely to generate higher cross-sectorial knowledge spillover.

– *Related trade variety*, which has been assumed to reflect the amount of knowledge inflows, within a given province, that are strongly related to a given industry but not strictly belonging to it. In other words, for each three-digit export industry in a given province, I provide the estimation of the imports entropy between the other three-digit industries – $EE(i)$ – excluding the same three-digit import sector. In this guise, I claim that more learning opportunities will occur within a given province if the inflows of extra-provincial knowledge can symmetrically balance the existent knowledge base, preventing the occurrence of crowding-out effects. The indicator has been calculated as below:

$$RELTRADVAR = \sum_{i} EE(i) \cdot X(i)$$

where $X(i)$ is the relative size of the three-digit export industry.

3.2. Data, empirical model and econometric estimation

An operational definition of «creative industry» has been given, selecting five three-digit groups within the NACE Rev. 2 system: cinema (JA591), music (JA592), photography (MC742), art (RR900) and cultural activities (RR910).

The empirical analysis has been carried out for 73 Italian provinces out of a total of 110 provinces. The reasons for excluding some provinces are mostly methodological: the time frame of the analysis is almost coincident with the creation of new provinces for which a large number of statistical indicators are not available until 2010. Other provinces have been excluded because their trade profile within creative industries is nearly insignificant and would have led to misleading results.

I collected data on creative workers using Asia Database (ISTAT), while «Coeweb» ISTAT database has been used to collect trade data. I also collected data on provincial density and the share of young population (21-30 years old) with a university degree.

A pooled OLS panel has been run, using the total amount of creative workers as dependent variable and the relatedness indexes as regressors, controlling as well for provincial population density and share of talented young people. The model is then the following:

$$BOHEM_{it} = \alpha + \beta_1 VARIETY_{it} + \beta_2 UNRVAR_{it} + \beta_3 IMPVAR_{it} + \beta_4 RELTRADVAR_{it} + \\ + \beta_5 LAURGIO_{it} + \beta_6 DENS_{it} + \varepsilon_{it}$$

where *BOHEM* stands for the total amount of creative employees; *VARIETY*, *UNRVAR*, *IMPVAR*, and *RELTRADVAR* have been computed as above mentioned (Sec. 3.1), *LAURGIO* stands for the number of graduates every 1000 inhabitants and *DENS* is population per km^2.

The results are mostly consistent with the main hypotheses: related variety, in terms of complementarity between sectors, has a positive and significant effect on provincial employment growth.

	Coeff.	σ	t-value	p
Intercept	-5803.4057*	2359.8832	-2.4592	0.01473
VARIETY	1499.6989*	734.3779	2.0421	0.04238
IMPVAR	-46.1916	1331.3045	-0.0347	0.97235
RELTRADVAR	1064-5122	1536.1123	0.6930	0.48907
UNRVAR	4266.3801*	1852.3950	2.3032	0.02224
LAURGIO	88.4798	50.3575	1.7570	0.08036
DENS	9.0271***	1.0338	8.7318	7.56e-16
Signif. codes	0 (***)	0.001 (**)	0.01 (*)	0.05 (.)
Balanced panel	n = 73	T = 3	N = 219	
R^2	0.34816			
Adj. R^2	0.33703			
p-value	< 2.22e-16			

Tab. I - Econometric results.

On average, an increase by 1 of the related variety indicator provokes an increase of nearly 1500 creative workers in a given province. Moreover, unrelated variety shows, as expected, a significant impact on the response variable: when a province has many industries that are unrelated, it can more easily absorb sector-specific shocks and thus dampen the detrimental effects of the crisis for the whole economy, including creative industries. Import variety and related trade variety do not seem to have a significant impact instead.

4. CONCLUSIONS

The purpose of the present work was to set the framework for a potential reconciliation attempt between conflicting visions of creative industries. This field of analysis has been increasingly receiving theoretical attention since the seminal contribution of FLORIDA (2002) and scholars have been engaging with cultural industries for all over the last three decades, but the more the debate lingers, the more irreconcilable and hardened the conflicting views are likely to become. The theoretical approach carried out in this paper looks at the bigger picture and focuses on a simple

question: why do creative industries flourish in specific places and not in others? A complete answer to this question was far beyond the purpose of this study, but a specific aspect has been stressed here: based on the econometric estimations illustrated above, related variety seems to play a major role for the flourishing of creative industries. High levels of related diversification tends to boost creative employment at provincial level and this was the core assumption of this study. However, in times of economic recession, unrelated variety has a significant, though indirect, effect on creative employment, as pointed out above. This might lead to infer, indeed, that metropolitan areas, which usually have higher level of unrelated variety, are likely to be more resilient when they face economic recessions, but a more accurate assessment of the evidences provided above has still to be undertaken, so any final remark would be imprudent at this point of the analysis.

Finally, it is worth considering two of the main shortcomings of this study. First of all as regards the model estimation carried out. A pooled OLS panel, which generally has the following formulation:

$$y_{it} = a + bx_{it} + \varepsilon_{it}$$

does not control for individual effects, so it is only able to test if relatedness, at different levels, does have *on average* a positive effect on employment growth. Nevertheless, it is well known that individual effects play a relevant role in this relation and better model specifications could be provided. Secondly, the use of provinces' trade profile requires some clarifications with regards to the territorial unit of analysis and the aggregated indicator chosen. Province suffers from two main shortcomings: it might be too large to capture socioeconomic processes of creativity occurring at sub-provincial levels and is affected by a considerable degree of variability in terms of borders and belonging municipalities. The use of Local Labour Markets (LLM) as territorial units of analysis might have been more accurate for the purpose of this study, but a large number of indicators are not easily available at that geographic scale. Nevertheless, provinces are far more adequate than regions to assess creative industries' dynamics given their strong interconnection with the urban context. As regards trade data, their use suffers from some limitations in terms of explanatory power: creative industries are mainly service-based activities and their export capability is relatively low. However, I claim that these limitations are not geographically bound but are mostly sector-specific, therefore we can infer that, in general, the higher the amount of provincial exports that a specific creative industry can generate, the more its relative importance within the considered province is.

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RIASSUNTO – Pochi passi in avanti sono stati compiuti finora nel cercare di superare le opinioni conflittuali sul ruolo della creatività nello sviluppo economico locale (FLORIDA, 2002; PECK, 2005). Inoltre, le industrie creative non trovano, attualmente, adeguato riconoscimento all'interno del dibattito riguardante l'impatto delle economie di localizzazione o di urbanizzazione sull'innovazione e la crescita. Nel tentativo di far dialogare tra loro questi due filoni della letteratura apparentemente disconnessi, utilizzo il concetto di *related variety*, così come formulato da BOSCHMA (2005) e FRENKEN, VAN OORT and VERBURG (2007), per verificare se il grado di diversificazione e interdipendenza all'interno delle industrie creative determina maggiori tassi di crescita dell'occupazione locale nel relativo settore. È stato stimato un modello OLS per dati panel per 73 province italiane (2008-2010), utilizzando il numero totale di addetti nel settore creativo come variabile dipendente e gli indici di *variety* come regressori principali. I risultati sono in gran parte coerenti con le ipotesi formulate: la *related variety*, in termini di complementarietà tra diversi settori, ha un effetto positivo e significativo sulla crescita dell'occupazione creativa provinciale.

SUMMARY – Little progress has been made in the mitigation of the controversies surrounding creativity and its role for local economic development (FLORIDA, 2002; PECK, 2005). Moreover, creative industries seem to have been denied, so far, a prominent role in the intense debate about the impact of localization or urbanization economies on innovation and growth. Taking departure in the void between these two streams of literature, I deploy the concept of «related variety», as formulated by BOSCHMA (2005) and FRENKEN, VAN OORT and VERBURG (2007), to verify if well-diversified and interdependent creative industries determine more pronounced local creative employment growth. A pooled OLS panel model has been estimated for 73 Italian provinces (2008-2010), using the total amount of creative workers as dependent variable and the variety indexes as main regressors. The results are mostly consistent with the main hypothesis: related variety, in terms of complementarity between sectors, has a positive and significant effect on provincial creative employment growth.

Parole chiave: industria creativa, related variety, province italiane.
Keywords: creative industry, related variety, Italian provinces.