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**The determinants of spatial location of creative industries start-ups: Evidence from Portugal using a discrete choice model approach**

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**Creative Industries** >> a range of economic activities with the mission to create and exploit creative goods (knowledge, digital, information, entertainment, cultural, artistic, and media products or services).

**Advertising, Architecture, Design, Visual Arts, Crafts, Film, Video, Photography, TV and Radio, Music, Performing Arts, Publishing, Software, Digital Media, Museums, Arts and Antiques, Heritage.**



- ✓ **A topic of increasing interest in political and academic spheres:** Creative industries as drivers of economic growth (e.g., Florida, 2004; Markusen et al., 2008; UNCTAD, 2010).
- ✓ **International debate** on the importance of Creative Industries for regional policy, national programs in a context of rapid ICT/ internet development.

## Motivation

- ❑ Despite the interest on the location determinants of creative activities, the **modelling of their location behaviour using micro-data is at an emerging stage.**
- ❑ The study of location patterns of creative industries has **mostly been comprised of exploratory analyses.**



## Contribution to the empirical literature

- ❑ Analysis of creative firms' location behaviour using **highly detailed data on firms** (each firm) **and on regions** (municipality level).
- ❑ Assessment of the role of location determinants **for the creative industries as a whole and for each creative sector in isolation** (Advertising, Architecture, Design, Film, Video, Photography, TV and Radio, Music, Performing Arts, Publishing, Software, Research), using some of the most recent modelling approaches to location.

## :: METHODOLOGICAL ISSUES

### Location determinants of the Creative start-ups in all the municipalities in Portugal (308 regions)

#### ➤ Sample:

369 start-up/ newly created firms in the Creative industry sectors (Advertising & Marketing, Architecture, Design, Film, Video & Photography, TV and Radio, Music & the Performing Arts, Publishing, Software, Research).

#### ➤ Database:

Micro-data from the Linked Employer-Employee Databases, Ministry of Economy, Portugal (year 2009).

#### ➤ Test for the hypotheses on the effects of the following location factors

(based on the literature):

H1) Agglomeration/ Localization economies/ Urbanization economies;

H2) Human capital (educational attainments);

H3) Tolerance (migrants legalization rate, social inequalities);

H4) Technology/ Innovation (R&D expenditures);

H5) Characteristics of contiguous/ neighbouring regions.

#### ➤ Modelling framework: Discrete Choice Model approach (McFadden, 1974) using a Conditional Logit Model - CLM (Carlton, 1983) on all the choices (308 regions) of all the firms in the sample.

## :: METHODOLOGICAL ISSUES

### ➤ Model: Discrete Choice Model - CLM approach

$$\pi_{ij} = \beta_1 \text{Population Density} + \beta_2 \text{LQ Creative Firms} + \beta_3 \text{LQ Service Firms} + \beta_4 \text{LQ Knowledge Firms} + \beta_5 \text{Industrial Diversity} + \beta_6 \text{Creative Diversity} + \beta_7 \text{Higher Education} + \beta_8 \text{Secondary Education} + \beta_9 \text{Culture} + \beta_{10} \text{Foreigners} + \beta_{11} \text{Social Inequality} + \beta_{12} \text{R\&D Firms} + \beta_{13} \text{Population Density\_spl} + \beta_{14} \text{LQ Creative firms\_spl} + \beta_{15} \text{LQ Service firms\_spl} + \beta_{16} \text{LQ Knowledge firms\_spl} + \beta_{17} \text{Industrial Diversity\_spl} + \beta_{18} \text{Creative Diversity\_spl} + \beta_{19} \text{Higher Education\_spl} + \beta_{20} \text{Secondary Education\_spl} + \beta_{21} \text{Culture\_spl} + \beta_{22} \text{Foreigners\_spl} + \beta_{23} \text{Social Inequality\_spl} + \beta_{24} \text{R\&D Firms\_spl}$$

, where  $\pi_{ij}$  is not observable. Firm  $i$  chooses location  $j$  over location  $k$  if and only if:

$$\pi_{ij} \geq \pi_{ik}, \forall k \neq j, k = 1, \dots, J$$

$\beta$  coefficients are given in the form of **Probabilities/ log odds ratios**.

\_spl = spatially lagged explanatory variables (matrix product between a contiguity spatial-weights matrix **W** with the vector **X** of explanatory variables).

### ➤ Main interest: to observe the **sign and effect of each explanatory variable** (municipality characteristics) **on the creative establishments' location behaviour**.

## :: MAJOR RESULTS

Hypotheses	Location Determinant / Var.	Estimated Coefficient	Stand. Error
H1) Agglomeration Econs .	LQ Creative Firms	<b>0.879**</b>	0.4047041
H1) Agglomeration Econs .	LQ Knowledge Firms	<b>0.785**</b>	0.3524896
H1) Agglomeration Econs .	LQ Service Firms	<b>-0.147</b>	0.484064
H1) Urbanization Econs .	Industrial Diversity	<b>0.068*</b>	0.0400985
H2) Human Capital (Higher)	Higher Education	<b>0.165***</b>	0.0394276
H2) Human Capital (Lower)	Secondary Education	<b>-0.00007</b>	0.0014653
H3) Tolerance (Migrants)	Foreigners legal. Rate	<b>0.293**</b>	0.1279316
H3) Tolerance (Social Ineq.)	Social Ineq. Ratio	<b>-0.063**</b>	0.0313443
H4) Technology (R&D)	R&D expenditures	<b>2.194**</b>	0.9108805
H5) Inter-territorial spillovers	Sec. Educ._spatial lag	<b>0.005**</b>	0.0025297
H5) Inter-territorial spillovers	Social Ineq._spatial lag	<b>-0.067*</b>	0.03949
Log-Likelihood = -1548.1567		Wald Chi2 (24) = 1229.31 [Prob > chi2 = 0.0000]	

CLM with spatially lagged variables ; n=369 creative establishments; j=308 alternatives or municipalities.

\*\*\*, \*\*, \* One, five and ten percent significance levels, respectively.

Source: Authors' computations based on STATA 13<sup>®</sup>.

## :: FINDINGS

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- ✓ Localization economies  
**Concentration of creative and knowledge-based activities** – positive, significant effect in location decisions.
- ✓ Urbanization economies  
**Diversified industrial tissue; inter-sectorial variety** - positive effect in location choices.
- ✓ Human capital  
**Higher education at a regional level** - positive effect on location decisions,  
**Lower educational levels** - negative/ non-significant effect  
>> specific requirements in terms of a highly skilled labour force.
- ✓ Tolerance  
**Tolerant/ Open environments** - positively affect location choices.
- ✓ Technology  
Stock of knowledge/ **R&D expenditures** - positive effect on location decisions.
- ✓ Inter-territorial spillovers  
**Municipality attributes** are more important for firms' location decisions than the characteristics of nearby regions.
- ✓ Location decisions **vary according** to the **creative sector** and to **firms' own characteristics** (such as firm's workers' educational level or technology-intensity).



## :: CONCLUSIONS and POLICY IMPLICATIONS

The more **diversified, tolerant and innovative** a region is



Higher **urbanization economies**



Higher accumulation of **human capital**



**Positive effect** on creative firms' location decisions

>> This causality should be recognized in terms of regional policy.

**Location** behaviour influenced by **municipality characteristics** and **not so much by the aspects of nearby regions.**

>> Creative processes mainly happen at a very localized level.

**Differentiated** location behaviour **according** to the creative firm's **educational level (workers)**, its **technology-intensity** and the **creative industry sector** to which it belongs.

>> Local policies should be designed according to the creative sector and the attributes of creative firms (e.g., knowledge-intensive/ research-based/ leisure-oriented/ functional).

## Extensions

- Use of **more recent data** at firm micro-level (2010, 2011, 2012) // **Panel data**.
- This is a classic analysis >> the **use of latest econometric approaches** (nested logit, mixed logit) may provide more robust and suitable analyses.
- An **extended analysis on the characteristics of creative firms** (e.g., sales, number employees/ size, employees' age), given that their location behaviour is affected by firms' own attributes.

**Thank you,**

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