

Requalification's policies of urban deprived areas through research centres: the case of research centre CESMA in east area of Naples.

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Abstract

It is a popular idea that firms located in clusters benefit from local knowledge spillovers: knowledge created by a local agent can be accessed and used by other agents without market interaction and financial compensation for the producer of the knowledge. In particular, in much of the literature on this topic, this concerns technological knowledge generated through research and development (Wolfe and Gertler, 2004, 1076). It has been often argued that knowledge flows freely within co-located organizations as a local public good (Breschi and Lissoni, 2001a). This is often regarded as a source of regional economic growth and as a causal reason for the emergence of agglomerations (Doring and Schnellenbach, 2006). Most territorial innovation models, including concepts such as innovative milieu, industrial districts, clusters, regional innovation systems and the learning region (Moulaert and Sekia, 2003), propose that territorial learning and local (technological) knowledge spillovers are an important agglomeration and innovation force. (Huber, 2012).

A current topic on which is struggling both in scientific literature and in the political sphere is the regeneration of urban deprived areas. It is well established that the thickness of local markets can enhance entrepreneurial activity (Vernon (1960)). It's this true also for the particular case of new services? In past it is has been established that because they carry out so many different tasks, a balance of skills may be beneficial to entrepreneurs (Lazear, 2004, 2005). An actual approach, from service's prospective, useful to promote the entrepreneurial activity, is think in term of a smart city. The concept of "Smart City", providing a solution for making cities more efficient and sustainable, has been quite popular in recent years, encouraging reflections, ideas, researches and projects for a "smart" urban development, particularly with reference to the smart service (Spohrer and Maglio, 2010; Barile and Polese, 2010).

In this frame which rule have the universities and the research centres? We know that universities potentially contribute to healthy and sustainable regional economies in numerous ways (Goldstein, 1995). This paper proposes a model, with both theoretical and managerial implications, to analyze and to model the effects, if they are relevant, of the interdependence between research centres and

the entrepreneurial activity in deprived urban areas in the age of smart city. So the paper aims to give an answer to the question regarding the possibility to requalify an area through a research centre considering, as driver of the approach, the entrepreneurial activity related to the new smart services for citizens generated by this co-creation value. Empirical results regard the east area of Naples (Italy).

Key words: Network, Interaction, Deprived Urban Areas, Relationship, Requalification, Smart city, value co-creation

1. Introduction

In proposing a new theory of economic geography, Paul Krugman (1991b, p. 5) asks, “What is the most striking feature of the geography of economic activity? The short answer is surely concentration²production is remarkably concentrated in space.” Perhaps in response to Krugman concern, a literature has recently emerged which focuses on the implications of the concentration of economic activity for economic growth. Models posited by Romer (1986, 1990), Lucas (1993), and Krugman (1991a,b) link increasing returns to scale yielded by externalities within a geographically bounded region to higher rates of growth. The results of Jaffe (1989), Jaffee et al. (1993), Feldman (1994) and Audretsch and Feldman (1996) suggest that R&D and other knowledge spillovers not only generate externalities, but the evidence also suggests that such knowledge spillovers tend to be geographically bounded within the region where the new economic knowledge was created. New economic knowledge may spill over, but the geographic extent of such knowledge spillovers is bounded. Lucas (1993) emphasizes the most natural context in which to understand the mechanics of economic growth is in metropolitan areas where the compact nature of the geographic unit facilitates communication. Indeed, Lucas (1993) asserts that the only compelling reason for the existence of cities would be the presence of increasing returns to agglomerations of resources which make these locations more productive. None of these studies, however, ask the question, Does the specific type of economic activity undertaken within any particular geographic region matter? This question is important because a recent debate has arisen focusing precisely on the composition of economic activity within an agglomeration and how such externalities will be shaped by that composition of economic activity. One view, which Glaeser et al. (1992) attribute to the Marshall-Arrow-Romer externality, suggests that an increased concentration of a particular industry within a specific geographic region facilitates knowledge spillovers across firms. By contrast, Jacobs (1969) argues that it is the exchange of complementary knowledge across diverse firms and economic agents which yields a greater return to new economic knowledge. There are clear policy implications of this debate in terms of policies directed towards innovation and technological

change. If the specialization thesis is correct, then policy should focus on developing a narrow set of economic activities within a geographic region in order to yield greater innovative output. On the other hand, if the diversity thesis is correct, then a geographic region comprised of a diverse set of economic activities will tend to yield greater output in terms of innovative activity. The key policy concerns would then become how to identify the commonalities and how to foster such diversity (Feldman., Audretsch., 1999).

2. Deprived Areas: An overview

The majority of the global population today is urban. The percentage of urban dwellers increased from 43% in 1990 to 52% in 2011, and it is expected to grow to 67% by 2050. All population growth from 2015 to 2050 is expected to be absorbed by urban areas, and most of this growth will occur in cities of less developed regions (United Nations, 2012). Rapid urban growth normally exceeds the capacity for local governments to deliver services and infrastructure, which increases urban poverty and intra-urban inequalities (Duque, Royuela, & Norena, 2013). The monitoring of poverty is a key issue for policy makers because it can help prevent poverty traps and crime nests and allocate public investments where they are needed most (Duque et al., 2013). Urban poverty is a multidimensional phenomenon; as such, there are many ways to measure it. These measures usually include information from at least one of the following dimensions: income/consumption, health/education, and housing (Carr-Hill & Chalmers-Dixon, 2005; Moser, 1998). They are computed from survey or census data, which are quite expensive, time consuming, less frequently produced, and often statistically significant for spatial units that are too large to capture the intra-urban variability of phenomena. This last feature creates inference problems such as the ecological fallacy (Baud, Kuffer, Pfeffer, Sliuzas, & Karuppanan, 2010; Robinson, 1950) or aggregation bias (Fotheringham & Wong, 1991; Paelinck & Klaassen, 1979).

Poverty mapping usually follows two types of approaches: the expenditure-based econometric approach linked to a poverty line used by World Bank, and the value-focused approach used by United Nations Development Programme (UNDP) based on the Human Development Index (Baud, Pfeffer, Sridharan, & Nainan, 2009). The Index of Multiple Deprivations (Baud, Sridharan, & Pfeffer, 2008), the Slum Index (Weeks, Hill, Stow, Getis, & Fugate, 2007), and the Slum Severity Index (Patel, Koizumi, & Crooks, 2014) all follow the value-focused approach that integrates several dimensions of deprivation in one single measure.

A slum household is defined as a group of individuals living under the same roof in an urban area that lacks one or more of the following: durable housing of a permanent nature, sufficient living space (not more than three people sharing the same room), easy access to safe water at sufficient amounts and at an affordable price, access to adequate sanitation in the form of a private or public

toilet shared by a reasonable number of people, and security of tenure (UN-Habitat,2006). Weeks et al. (2007) presented the calculation of the Slum Index from census and survey data as the sum of the fractions of households that lack one or more of the five conditions mentioned above. The value can range from 0, meaning that no slum-like households are present in an area, to 5, where all households in an area lack all five of the features defined by UN-Habitat. The pro-portion of slum dwellers in cities is strongly correlated with the Human Development Index, which integrates three development indicators: per capita GDP, longevity and educational attainment (UN-Habitat, 2003). Thus, the presence of slums in a city is an indicator of poverty, and the Slum Index is a good proxy variable for urban poverty at the intra-urban level. This paper implements spatial econometric models using data from Medellin (one of the most unequal cities in the world) to assess whether the Slum Index can be estimated using image-derived measures

2.1 The case of deprived east area of Naples and new research centre Cesma

The Research Centre Cesma of the University of Naples Federico II, on which is based the proposed analysis, rises from 2012 in the ex former Cirio in San Giovanni in Teduccio, district of the east area of Naples (figure 1), that is a deprived no-tax area in which local government decided to invest to regenerate it through industries and research centres. An area of 200,000 square meters that hosts classrooms, laboratories, libraries, departmental studies and conference center, with the aim to reevaluate spaces, in a logic of urban regeneration of the coastal strip of Naples and suburbs. CESMA is the Center for Advanced Metrological Services of the University Federico II, in which pre-existing laboratories network with new laboratories to perform measurement activities in several different fields of Engineering, Physics, Chemistry and Biology. The Centre CESMA come as node connection between the University Federico II and the industries and enterprises of the east urban area of Naples.



Figure 1 East Urban Area of Naples.

3. Empirical analysis This empirical analysis try to give an answer to the question relative to the presence of eventual positive influence of the research centre Cesma on the increase of the propensity of the firms of the east area of Naples to innovation. The analysis is polarized with reference to the innovations related to smart cities services, deriving from this empirical analysis a general model. For this aim it has been considered, as territorial innovation measuring approach, the AICTT-RTT, that is an approach to evaluate territorial innovation, derived from the protocol AICTT-RTA protocol (De Falco, 2011, 2012, 2014) used to evaluate the innovation ability of firms. Analysis is been conducted through selection of many different new smart city services classified as in table I and some examples are reported in table II.

<i>Classes of Services</i>	<i>Number of services selected</i>
Health	10
Cultural/Heritage	14
Transportation	15
Tourism	13
Security	5
Total	62

Table I Classes of services

In table II examples of processes/services selected in the east area are reported

<i>Classes of Services</i>	<i>Example of services selected</i>
Health	Medical on line Reservation; Medical e-care.
Cultural/Heritage	3D digitizing of cultural heritage; Mobile augmented reality for cultural heritage; Digital narratives to support the collaborative learning and exploration of cultural heritage.
Transportation	WiFi inside the trains; On line multi reservation.
Tourism	On line destination management; ontology touristic guide.
Security	Presence of street webcams; Presence of exhibit.

Table II examples of processes/services selected.

Territory of east area of Naples, is evaluated through a Technology Audit (TA) conducted in compliance with the AICTT-RTT protocol. The AICTT, the Italian Association for Technology Transfer Culture (www.aicct.it), filed a trademark, RTT (Performance Technology Territory), that is a parameter used to assess the ability of monitored territory to generate innovation and competitiveness between firms working in that area. The analysis is structured across four asset evaluations - Knowledge Economy, Knowledge Engineering, Finance Knowledge, Organization of Knowledge - according to a set of key performance indicators (KPIs) with items for each direction: What results can be achieved? We can get a complete overview of the territory, assess strengths and weaknesses, gaps, and possible corrective action. The RTT score is distributed within a score featuring seven classes of performance (from G to A +), as shown in figure 2, in which territory is located according to its ability to innovate. The systemic approach Auditor - Consultant is a rating system that allows the company to compete with competitors and offers web-based photography that can represent not only the present but also the future vision that has to be pursued (De Falco 2013).

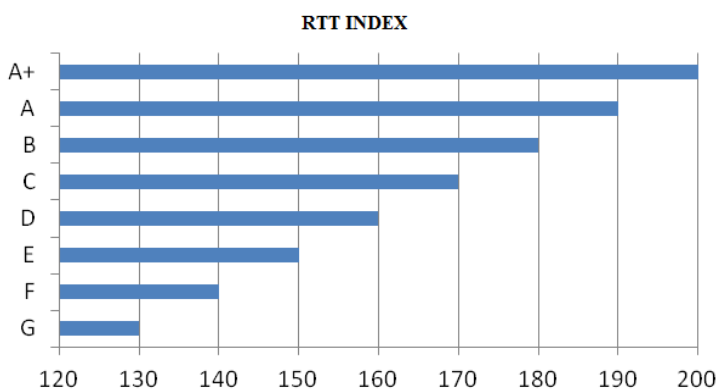


Figure 2 RTT Index

The territory of east area of Naples is evaluated analyzing, during the years 2013 and 2014 after the startup of the research centre Cesma, for each sector of services characterizing the territory itself, the mean number of the transitions from the RTT-class to the successive higher RTT class¹ respect to the previous standard detected by the same services from 2011 to 2012 before the presence of the research centre.

¹ TA, based on AICTT-RTT methodology, can also be conducted off-line through databases available to the Association AICTT (<http://www.aicct.it>) relative to the profiles of companies that have participated in regional and national bids for funding. Without conducting a real TA, the AICTT-RTT methodology is applied through a picture of the company detected from these databases and then by simulation, we can verify which RTT score is assigned to this territory.

In table III are shown the results of collected data tested for the different stratifications considered. We consider also cumulative data because after a transition of RTT Class in a year, the probability that the same service, in the next year, replaces a new transition is low.

<i>Services' sector</i>	<i>Number of Services</i>	<i>Number of transitions from RTT-class</i>							
		<i>2011</i>	<i>2012</i>	<i>Cumul.</i>	<i>%</i>	<i>2013</i>	<i>2014</i>	<i>Cumul.</i>	<i>%</i>
Health	10	1	1	2	20,00	7	7	14	140,00
Cultural/Heritage	14	0	0	0	0,00	0	1	1	7,14
Transportation	15	0	0	0	0,00	16	32	48	320,00
Tourism	13	0	0	0	0,00	5	11	16	123,08
Security	5	0	0	0	0,00	2	3	5	100,00
Total	57,00	1,00	1,00	2,00	20,00	30,00	54,00	84,00	690,22

Table III: *Number of transitions from RTA-class: Results in area east of Naples*

<i>Services' sector</i>	<i>Number of Services</i>	<i>Number of transitions from RTT-class</i>							
		<i>2011</i>	<i>2012</i>	<i>Cumul.</i>	<i>%</i>	<i>2013</i>	<i>2014</i>	<i>Cumul.</i>	<i>%</i>
Health	10	3	3	6	60,00	5	7	12	120,00
Cultural/Heritage	14	4	5	9	64,29	8	10	18	128,57
Transportation	15	3	4	7	46,67	7	8	15	100,00
Tourism	13	1	2	3	23,08	4	7	11	84,62
Security	5	1	1	2	40	2	1	3	60,00
Total	57	12,00	15,00	27,00	194,03	26,00	33,00	59,00	493,19

Table IV: *Number of transitions from RTT-class: Results from generic urban areas*

In table 5,6 and 7 and are shown the Δ -analysis conducted, that show that sectors Health, Transportation, Tourism and security are more sensible to the presence of research centre Cesma in the same geographical area.

<i>Classes of Services</i>	<i>Number of services selected</i>	Δ %
Health	10	120,00
Cultural/Heritage	14	7,14

Transportation	15	320,00
Tourism	13	123,08
Security	5	100,00
Total	62	670,22

Table V: Difference between years 2011,2012-2013,2014 in the same east area of Naples

<i>Classes of Services</i>	<i>Number of services selected</i>	$\Delta \%$
Health	10	20,00
Cultural/Heritage	14	-121,43
Transportation	15	220,00
Tourism	13	38,46
Security	5	40,00
Total	62	-197,03

Table VI: Difference between data related to east area of Naples and data related to generic urban area in the same years 2013 and 2014 after the presence of Cesma.

<i>Classes of Services</i>	<i>Number of services selected</i>	$\Delta \%$
Health	10	-40,00
Cultural/Heritage	14	-64,29
Transportation	15	-46,67
Tourism	13	-23,08
Security	5	-40,00
Total	62	-214,03

Table VII: Difference between data related to east area of Naples and data related to generic urban area in the same years 2012 and 2013 after the presence of Cesma.

3.1 Discussion

Proposition 1: the formalized or also not-formalized (only knowledge) partnership with a research centre, is an explanatory variable of influence respect the perception from users of increase of innovation in services characterizing a territory.

Proposition 2: the proposition 1 is more true in the urban deprived areas.

Proposition 3: some sector related to the smart cities are more sensible, in term of propensity to innovate to the presence of research centre in the same geographical area.

Proposition 4: the proposition 3 is more true in the urban deprived areas.

Conclusions – Results of the analysis may give three positive corollaries: first they may promote further studies in this sector because the assumption of service's prospective as driver of the approach lends itself well to further studies not yet present, in large numbers , in the scientific

literature of the field; second, they may guide both researchers and managers of local urban institutions to develop more and more geographical connections between citizens and research institutions to promote the entrepreneurial activity related to the smart services in the deprived areas.

Third, it enhances the sustainability of territories through a new conceptualization of smart city in which the presence of a research centre became fundamental for the smart services development.

This paper analyzes the hypothesis of co-creation value deriving by the interaction between entrepreneurial activity related to the new smart services of deprived urban areas and presence of research centre.

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