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OFFICIAL STATISTICS FOR EVIDENCE-BASED NATIONAL AND REGIONAL POLICIES – POLISH EXPERIENCE

Magdalena Ambroch and Katarzyna Wrobel, Central Statistical Office of Poland, Poland

In the days of growing importance of the strategic management based on facts, reliable official statistical data are necessary not just for the needs of planning public policies, but also for monitoring and assessment of the undertaken interventions. Support of the official statistics is particularly significant in respect of the regional planning of public policies, when the strategic purpose is to ensure the sustainable development in the social, economic, environmental and territorial dimension.

1. Directions of development of the official statistics in the context of the strategic management needs

For many years the official statistics has been involved in conceptual works for planning and implementation of public policies,that include in particular the support in creation the sets of indicators monitoring goals included in national and regional development strategies, the Partnership Agreement and the national and regional operational programs.

The application of methods indicating the relations between observed macroeconomic processes and local conditions has specific meaning for development of the statistical research. Recipients are interested in data of high quality, which are "traditionally" classified (according to the adopted administrative and statistical divisions) and the ones available for the delimitated functional areas (interurban zones, metropolitan, border areas, joint job markets and others). The present direction of the spatial research includes also the classification of use of land and the business typology of gminas (LAU 2 level). The methods of small areas statistics are developed and used on the lower aggregation levels than hitherto.

The intensification of activities carried out in the area of the statistical research includes new topics, methodologies and implementation of new research tools. As a result, new indicators and information are obtained for areas previously unexplored or on more detailed territorial levels.

2. External cooperation for monitoring of intervention of public policies

In respect of growing and changing needs for statistical information, creation of joint platforms integrating a broad selection of initiatives, being the basis for strategic thinking, becomes a necessity. The main core of support of decision-makers in the process of strategic management are the institutions established in 2011-2012: at the central level (at the Ministry of Regional Development) –the National Territorial Observatory and at regional level – 16 Regional Territorial Observatories. The observatories are the main link of the cooperation and information flow system between the major public entities taking part in the implementation of public policies in the national and territorial aspect. Their main goal is the monitoring of realization of the assumed targets and maintenance of relations between the regional development and implemented interventions co-financed from the EU funds.

The official statistics actively participates in development of a system focused on information services for national and regional authorities. The basic impulse for the development of the public statistics was assigning the Central Statistical Office with the status of the key institution in the area of monitoring of the cohesion policy. Strengthening of external cooperation in this respect was possible due to the Letter of Intent on cooperation between the Minister of Regional Development and the President of the Central Statistical Office, signed in 2012. This Letter constitutes the basis for activities and research initiatives focused on development of the statistical offer and its adjustment to the specific needs, e.g. of regional policies.

Some organizational changes provided the public statistics services with the necessary potential capable of fast, dynamic response to the information, analytical and research needs. While, at the central level, the unit responsible for the external cooperation is the Central Statistical Office, in regions the leading role is performed by Statistical Offices. Since 2010 in their structures Voivodship Regional Research Centres have operated as statistical knowledge centres, which visibly improved the communication mechanisms of the public statistics with stakeholders. The catalogue of entities with whom the Centres cooperate is very wide. It includes both

units from the public sphere (in particular local government units) as well as from the business sphere, with a significant expert role and commitment of scientific organisations, in particular in the area of the regional development of the research and analytical projects. Especially actively Centres cooperate with the Regional Territorial Observatories. The tasks performed for the local government include:

- support of research works, including analyses and results verification,
- participation in programming and monitoring of regional development, of which selection and creation of indicators monitoring progress in the implementation of voivodship development strategies,
- developing and assessment of problem analyses and statistical surveys, including the diagnosis of socio-economic situation of regions and development conditions (potentials and specialization of the regions),
- support in creating and updating external database tools, which contain official statistical data,
- dissemination of data and statistical education.

3. Products of the public statistics supporting public policies

The statistical offer, guaranteeing the data of high quality and adequate to national and regional users' needs, includes both publishing activities (especially, development of analytical publications, including territorial comparisons and analyses of phenomena specific for particular regions) as well as the expansion of database systems.

3.1 Statistical Vademecum of Local Government

The statistical product, originally dedicated for the decision-makers in the region and at present, widely used by various recipient groups, is the publication entitled *Statistical Vademecum of Local Government*. It has been published on the annual basis since 2010. Performing the function of "portraits" of territorial units, it contains the most important statistical information (including their graphic presentations) for all voivodships (NUTS 2), poviats (LAU 1), cities with poviat status, gminas (LAU 2) and metropolitan areas or agglomerations.

3.2 Local Data Bank

The largest in Poland, comprehensive base of the statistical information on economic, demographic and social situation as well as on the condition of the environment is – operating since 1990s and constantly expanded – *Local Data Bank (http://stat.gov.pl/bdlen)*. This is a free-of-charge, public database containing information in all sections of territorial division of the country. It ensures a constant access to up-to-date annual and short-term data (along with methodological information). It enables conducting the multi-dimensional statistical analyses in regional and local systems.

3.3 Development Monitoring System STRATEG

For purpose of strategic planning, but also for the monitoring and assessment of undertaken interventions the most important IT product of the public statistics is the STRATEG system, developed in 2013 by the Central Statistical Office, on the basis of the aforementioned agreement with the Minister of Regional Development. The system, also in the English version, is available at http://strateg.stat.gov.pl. This is a public, multi-dimensional and innovative database, gathering indicators monitoring the strategies and documents supporting implementation of cohesion policy, valid on European, national and regional level, i.e.:

- Europe 2020 Strategy,
- all national strategies,
- voivodship and superregional strategies,
- Partnership Agreement,
- national and regional operational programmes.

Set of monitoring indicators is enriched with measures considered as supporting the development policy. The STRATEG includes annual data on the following territorial levels:

- aggregates for EU-28 and EU-27 as well as the data for EU Member States, Poland,
- macro regions/functional areas (Eastern, Western, Southern and Central Poland),
- lower territorial levels (up to LAU 2),
- selected indicators for EU regions.

STRATEG enables analysis of the progress in execution of particular strategies and programs. A comprehensive set of indicators can be reviewed also according to the cohesion policy objectives or by thematic areas; it is also possible to present the data for selected territorial units, including EU regions.

The data are presented in the form of tables, static and dynamic charts and maps. An important functionality of the system is the possibility of modification of all three forms of data visualization and creating own comparisons, in accordance with individual needs. Resource and system functionalities are constantly developed.

STRATEG performs also the educational function, offering the access to methodological knowledge and information concerning the development policy. Each of the indicators has a file containing methodological explanations, information on the source of data and their availability in the system (the length of time series, monitored territorial level, availability for the EU). An important support for the administration bodies will offer a methodological manual that will be published by the end of this year. It will be a compendium of knowledge about statistics resources, dedicated to persons not professionally related with statistics, but often using data. Its particular feature will be an attempt to indicate possibilities and restrictions in interpretation of statistical information.

4. Conclusions

The many years' cooperation of public statistics with decision-makers resulted above all in facilitation of policy planning and monitoring process, possible through dedicated statistical monitoring system. The improvement of the strategic documents' quality is visible especially in better adjustment of indicators for the assumed development goals, both at the national and regional level. Close dialog with stakeholders allowed the public statistics to adequately identify information gaps and focus on activities enriching country and territorial analyses with observation of crucial but hitherto unexplored phenomena.

GAME OVER, NEW GAME: AN ECOLOGICAL PERSPECTIVE OF VIDEO GAME INDUSTRY RESILIENCE IN LIVERPOOL

Dr Dane Anderton, Edge Hill University Business School,

The main point taken up in this article is the evolutionary resilience of the Liverpool's video game ecology, a term used to conceptualise the sector agglomeration in a peripheral city region (Toulmin, 1990; Boschma, 2015). New trajectories of regional growth 'do not start from scratch but are strongly rooted in the historical economic structure of a region' (Neffke *et al*, 2011:261). Few studies have examined why different types of regions experience diverse path-dependent development (Isaksen, 2015). Furthermore, there has been much discussion over an evolutionary approach to regional resilience (Christopherson *et al*, 2010, Cooke *et al*, 2011). This paper examines the evolution of the video game ecology in Liverpool City Region and its ability to adapt and reconfigure industrial, network and institutional structures against the backdrop of external and internal shocks (Boscham, 2015). Rather than seeing resilience that is based on a return to equilibria or multiple equilibria, 'resilience is considered as an ongoing process' (Simmie and Martin, 2010:31). Evidence is derived from 25 primary qualitative interviews with video game firms' own-managers and supporting institutions at a local and national scale. Secondary data, both qualitative and quantitative, has also been used to supplement the analysis and inform the broader context.

Liverpool has had a turbulent history and seen dramatic industrial change (Southern, 2014). This was noted especially in the 1980's with the militant tendencies of the Labour lead council. However, the 1980's was also significant period for the video games sector. Rising interest and demand from the USA, Japan and Europe lead to an indie developer boom in the industry (Johns, 2006, Balland *et al*, 2013). The timing brought about the first developer studio in Liverpool 'Bug Bite'. From 1980 onwards an evolution began that lead to Liverpool becoming a European command centre for International Gaming Studios (IGS) such as Sony and Activision (Anderton, 2014). Between 1980 and 2000 the average firm life cycles was between 5 and 10 years. News firms would usually emerge from the dissolution of old ones. The ecology saw several acquisitions by IGS that cemented Liverpool's position in Europe (see table 1). Most notable was the acquisition of Psygnosis by Sony in 1993. The

period 2000 to 2010 included two further acquisitions of SME's by IGS to internalise particular franchises and capabilities.

Table 1 Video game acquisitions in Liverpool

Firm	Acquisition ($ millions)	Acquiring Firm	Date	Source	Jobs
Psygnosis	Unknown	Sony	1993	Japan	100
Bizarre Creations	67.4	Activision	2007	USA	200
Juice Games	3.75	THQ	2006	USA	60
Evolution Studios	Unknown	Sony	2007	Japan	47

Figure is approximate, based on 2006 annual report data regarding two acquisitions at $7.5 million.

The resilience of the sector has been predicated on the M&A activity over the last 20 years, as small independent studios were acquired by larger IGS and operations expanded. Consequently M&A activity also led to new spin out firms emerging that would service the needs of the larger IGS in the ecology (Klepper, 2010). The nature of the industry meant that firms relied heavily on IGS and stayed very much in an exploitative state of organisational ambidexterity (Cadin and Guerin, 2006; Raisch *et al*, 2009). However, the shock of the 2008 global financial crisis hit the game industry hard resulting in a global reorganisation of IGS. At the same time technological changes were underway affecting the ways in which consumers accessed, purchased and played video games. This change came as a result of the convergence between mobile telephony and wireless Internet access, culminating in smartphone technology (Steinbock, 2003). By 2009 smart phone sales were rivalling sales of consoles, and by 2011 they has outstripped the new generation of hardware consoles by two to one as shown in figure 1.
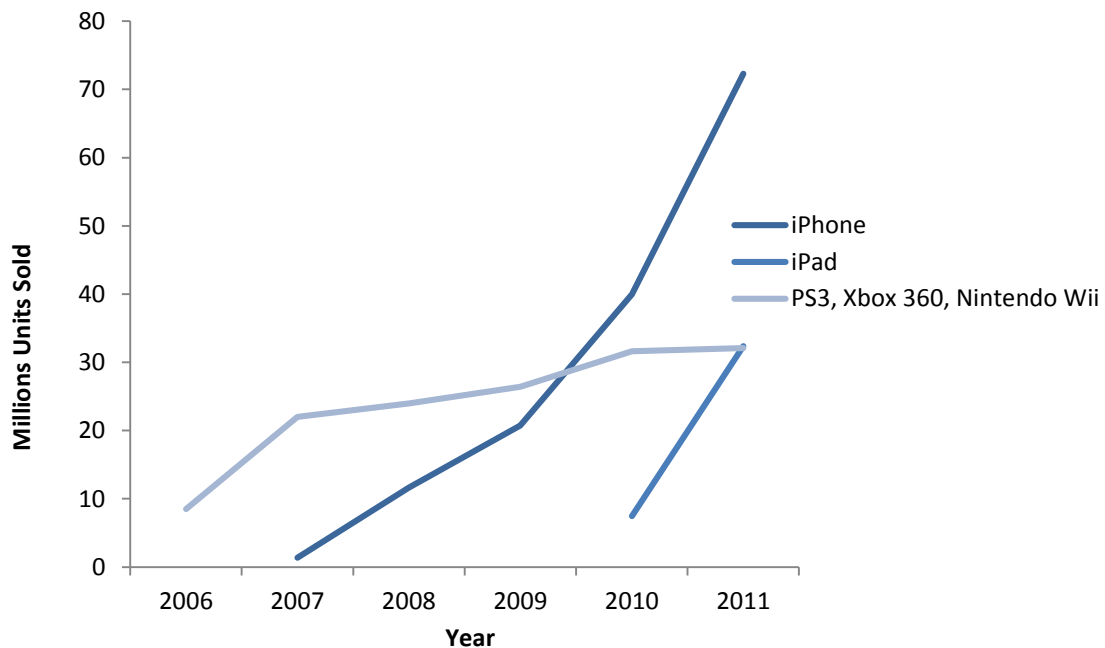

Figure 1 Unit sales 2006 – 2011 (Data Source: Apple Annual Report, Microsoft Entertainment Annual Report, Sony Computer Entertainment Annual Report and Nintendo Annual Report, 2006-2011)

As a result Liverpool's video game ecology fell hostage to this reorganisation, losing three IGS and making over 100 people redundant (Liverpool Echo, 2011). The loss of three IGS are detailed in table 2.

Table 2 Firm closures in the Liverpool ecology

Company	Year of Acquisition	Year of Closure	Reason	Result
Sony	1993 (Psygnosis)	2012	Reorganisation of international operations	Five known spin outs located in the Liverpool ecology. A number of freelancers are still available in the Liverpool ecology
Activision	2007 (Bizarre Creations)	2011	No buyer found after the parent company decided to offload the struggling studio[1]	Three know spin outs located in the Liverpool ecology
THQ	2006 (Juice Games)	2011	Firm reorganisation and consolidation due to financial issues	Three spin out firms locating in Manchester

Sources: Annual reports 1Eurogamer (2011)

However, against this backdrop the sector has in fact grown from 9 firms pre-crisis to almost 30 in 2013. This resilience is contradictory to previous evolutionary processes whereby firms in Liverpool City Region remain dependant on IGS, avoiding exploratory states of organisation ambidexterity. Instead, external shocks have led to firms spinning out of the closure of IGS and a rhizomatic ecology emerging (Raisch *et al*, 2009). The breakdown of firms as of 2013 can be seen in table 3.

Table 3 Video game activity in Liverpool in 2013

Activity	Number of Firms	Micro	Small	Medium	Large	Number Interviewed
Developer	25	4(4)	20(11)	1(1)	0	16
Online Publisher	1	0	1(1)	0	0	1
Sound	1	1(1)	0	0	0	1
Visual art and graphic	1	0	1(1)	0	0	1
Outsourcing	1	0	1(1)	0	0	1
Multinational Studio	1	0	0	0	1(1)	1
Total	30	5	23	1	1	21

Firms were established within days of the IGS closures. Many of the new firm owner managers stated they used their own funds from redundancy or personal savings to establish a firm. The new firm formations are adapting to the new economic and technological contexts, yet still being able to utilise existing skills and networks. The new pathway for most firms was in smart phone game applications ('apps'). Rather than focusing on high budget big project 'Triple A' games, new business models focused on small budget 'apps' that required smaller project parameters. For many of the new firms in the city region app development is the predominant way of renewing the video games ecology. However, many of the smalls firms have to rely on contractual work from IGS to provide a cash flow in order to keep the business active and support the development of their own game apps. The firms are exhibiting an ambidextrous organisational form, returning to IGS for work they are familiar with and deemed normative, but also exploring new autonomous actions in 'app' development (Andriopoulos and Lewis 2009; Raisch *et al*, 2009).

"So we basically formed [a company] immediately after Bizarre Creations was closed, so February this year, yeah, so Bizarre was closed on the 18th February and pretty much the Monday after, so the 21st, we were up and running, kind of! Without any contracts or being able to pay staff, a group of us just decided like you know we'll start a new company, we're not going to get paid, so we'll do it, we'll give ourselves like three months of not getting paid to kind of see how things go basically, and try and win a contract" (Interview Developer 8, 30/11/11)

The quote above eludes to the challenges a new firm in the video game ecology faced, with individuals coming together without any projects to provide cash flow, only their ideas for future games. As another developer adds below:

"what we've been doing is when there's outsource work to do, we'll do that, and when there's not we'll work on our games." (Interview Developer 3, 16/07/12)

Liverpool City Region had the support of the Regional Development Agency (RDA) until 2010 when the coalition government removed the regional institutions. The video games sector had support from the RDA, albeit relatively small compared to other sectors such as Life Science. However, the resilience of this sector is not predicated on hard infrastructures, institutional support or public money but on local reorganisation and self-funded entrepreneurialism (Rodríguez-Pose and Di Cataldo, 2014). The ecologies ability to renew after an economic shock is linked to the ability to utilise inherited connections and maintain soft infrastructures that are essential to creative ecologies (Howkin, 2010; Colapinto and Porlezza, 2012). Additionally, Liverpool City Region has provided a place in which these firms feel bounded to. The longevity of the ecology is yet to be determined as it sets of on a new trajectory without the successful IGS ability to breed successful firm spin-outs (Klepper, 2010). Further longitudinal research is needed to keep pace with the evolution and subsequent resilience of the sector in Liverpool, as well as situating the debate within the broader industrial and technological changes affecting the sector.

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STIGMATISATION OF BODIES AND SPACES. AN ETHICAL READING OF THE POOR DOORS IN LONDON

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The term stigma has ancient roots – and has always played a central role in our lives and being-in-space-and-communities. As often happens, the etymology of a term discloses hidden as well as powerful meanings. From ancient Greek stigma, the word literally means '"mark of a pointed instrument, puncture, tattoo-mark, brand", from root of stizein "to mark, tattoo" […] Figurative meaning "a mark of disgrace" in English is from 1610s' (Online Etymology Dictionary). From the etymology it becomes immediately apparent how the word had, originally, a very clear physical and visible meaning (in effect the infamous mark used to be burnt into the body, so as to make the marked body recognisable) – which, over the centuries, has grown to be more linked to a morally dishonourable situation, in this way partially attenuating its bodily roots, as it were. As Ervin Goffman points out in his ground-breaking book Stigma: Notes on the Management of Spoiled Identity: 'Today the term is widely used in something like the original-literal sense, but is applied more to the disgrace itself than to the bodily evidence of it' (Goffman, 1963, pp. 1-2). Further to this, we argue that the term stigma has never really lost its physical roots – the reference to them might be less apparent, but the (moral) mark has remained, in our imagination, as corporeal and visible as it was in the past. Hence, nowadays as well as centuries ago, stigma does have great influence on our collective perception and understanding of bodies and urban spaces exactly because of its bodily, violent origins: 'By definition […] we believe the person with a stigma is not quite human. On this assumption we exercise varieties of discrimination, through which we effectively, if often unthinkingly, reduce his life chances' (our emphasis) (Goffman, 1963, p. 5). In other words, for Goffman, morally framing a body into a stigmatising categorical box – or into a stigmatising space, we may add – is tantamount to reducing its possibility of acting freely, undergoing changes or exploring new ways of moving-without-superimposed-reservations. These reductions can become, as a matter of fact, restrictive acts of extreme violence not only in a moral, but also in a physical sense. Moreover, a stigma does not decrease its intensity over time: in fact, it is supposed to be everlasting, namely to mark forever a certain body or space. Much less will it lose power if associated – as it is always, by definition – to a moral category: the mark is forever linked, in our bodies, to what is considered morally bad, hence to shun and expel at all cost. In this conception, morality is the operation of fixing good and bad as categorical, eternal and universal values (Deleuze, 1988) – as opposed to ethics, which defines them as temporary results of spatial encounters, as we will explain further on. Therefore, when we witness a stigma looming over a body or a space, we immediately react to the physical and corporeal evidence of the stigma itself: we may react so as not to be contaminated by it – or we may rationalise that we are in front of some sort of apparent injustice being perpetrated against a body (and its space) whose movements are, as a matter of fact, considerably reduced and hindered. Either way, we maintain that urban studies should take into consideration the serious consequences that this physical and moral operation of labelling (Becker, 1966), boxing and categorising does have on both urban bodies and spaces. What happens when a space is forever labelled as dirty, dangerous or, even, poor? Does it have effects on bodies living it – does it have, as we believe, actual impacts in terms of inequalities, and on how urban policies end up treating that very neighbour (as something somehow separated, different from the normal ones)? To answer these questions, in this paper we mainly refer to the theory of affects, drawing upon Spinoza's Ethics (2009) as well as its interpretation by Deleuze (1988). This framework, we advocate, can help us overcoming this morally framed and fixed understanding of space, and embrace a more ethical and situated one. According to them, it is (ethically) good what increases bodies' affective capacity of acting/being acted upon – and bad what is harmful and decreases their potential, their energy (what reduces their life chances, if we want to use Goffman's expression). In this sense, affects do produce material effects on bodies, and are always spatially situated (i.e. space does have a central role in shaping bodies and their affects). In other words, good and bad are ethical values spatially determined every

time bodies and space encounter and generate a situated event. Therefore, an everlasting moral stigma that, applied to a living space, has the power to harm or crystallise changes, movements and, eventually, life itself would be by all means defined as bad affect, having negative consequences on bodies. Nevertheless, it is apparent that urban policies and planning's interventions tend to adopt the opposite perspective – they need to set up general (universal, we may say) principles and act quickly and, as a consequence, need to overlook the local contexts and affects as well as the ethically and spatially generated urban events. By doing so, they end up reproducing the above-mentioned categorical boxes through the operation of morally fixing and framing bodies and space. This brings about stigma eventually, with more or less extensive consequences on the growing of inequalities and intolerance against what is labelled and planned as different, whatever the reason might be. For instance, let us consider the case of the poor doors: we are here witnessing a case of stigma being physically applied to a space. This has, however, direct consequences on bodies using it as well. The expression poor doors – which does have a powerful stigmatising and moral meaning – was used for the first time by the news site West Side Rag (2013) while describing the practice of separating the least well-off entrances from the rich ones in Manhattan. After one year, in 2014, the first examples of poor doors in London have been described by the Guardian (2014a, 2014b, 2015) and other British newspapers and magazines, while many protests (Class War) against this phenomenon (defined as insulting) have started spreading throughout the city, aiming at jeopardising this unexpected result of housing policies whose initial purpose was only to increase the number of affordable houses in London. The lack of social houses in London has been around for decades so far. This phenomenon is only one of the unwanted consequences brought about by a combination of housing policies and strategies (Gov.uk, 2015; Greater London Authority, Mayor of London, 2012), planning regulations (Department for Communities and Local Government, 2013, 2015; Parliament of the United Kingdom, 2005, 2013) and unpredictable circumstances (Burgess, Crook and Monk, 2013): on the one hand, from the 80s on, Thatcher's Right to Buy scheme (Parliament of the United Kingdom, 1980) has allowed tenants to buy their own house at great discount – in this way reducing the number of social houses available. On the other hand, the unexpected recession of the last few years have had heavy effects on the real estate market: in fact, throughout the city many sites have been left unfinished because of developers' inability to complete them under the (no more economically feasible) agreements initially stipulated with planning authorities. As it turns out, the poor doors are a practical and viable way, for developers, to build private houses while leaving a percentage to affordable housing, as required by planning regulations. Hence, by separating private houses from affordable ones, developers are able to rent or sell the former at market prices – whereas housing associations can guarantee lower taxes to the tenants of the latter, as the poor door has less communal services than the first ones, less facilities in terms of security, concierge, etc.: 'the separate doors to these developments mean that the housing associations […] and their tenants do not face the service charges attached with the luxurious surroundings' (The Guardian, 2014b). If we read this case through a lens that is both ethical and spatial, we first realise that the stigmatising expression poor doors is so powerful and visible (in a very physical way) that keeps generating violent reactions against what is considered an unequal solution. Secondly we ascertain that the forced division of the same building into segregated accesses has the same powerful stigmatising influence on both bodies and space. It is exactly this material and spatial effect of affects that urban studies should start considering seriously. No matter how a solution, from an economic point of view, is effective and reasonable, or what a rational understanding of housing rules wants us to believe: affects keep telling bodies a completely different story.

In conclusion, if we, as planners, want to opt for a more ethical understanding of local contexts and communities, we must ask ourselves how to prevent urban policies from spreading morally stigmatising affects – such as the ones above described – which end up limiting bodies' life chances and increasing inequalities.

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SUSTAINABLE VS SMART CITIES

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1.0 Introduction

The Government of Mauritius is promoting the concept of Smart Cities in the country. In the last budget speech, the Minister of Finance has announced the development of eight Smart Cities and five technopoles, the main objective being job creation. The smart city project is an initiative from the government to stimulate innovative scientific and technological activities, provide technology-driven facilities to the business community and create a vibrant city lifestyle.

The aim of the government is to provide for living in sustainable, convenient and enjoyable urban surroundings in these cities.

However, are these smart cities really sustainable?

2.0 Sustainable development

The concept of sustainable development emerged in the early 80's as an attempt to link the environmental and socio-political concerns surrounding human activities and their effects on human development issues. This was developed in the World Commission on Environment and Development (WCED) in 1987. In order to attain a sustainable city, it is important that the three components or pillars of sustainability are in equilibrium as can be seen in Figure 1:
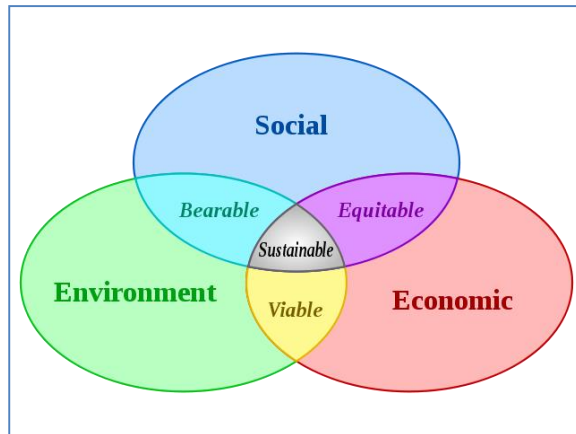

Figure 1 : Three main components in sustainability
 (Source : Ott and Thapa, 2003)

- Social development consists of improving the lifestyle of people by providing them with all the basic needs, for instance water and sanitation. It also promotes equality and education.
- The generation of wealth through economic activities, also need to be sustainable so that people can have a good standard of living.
- Protection of the environment on which we depend for survival, is important (UNEP, 1986).

3.0 Urban Sustainability

Urbanisation has been one of the most prominent trends of the 20th and 21st century (UN 2010 and Street, 1997). Urbanisation is defined as a movement of people from rural to urban areas with population growth equal to urban migration. According to a report by the United Nations (2010), the ratio of urban populations rose from 13% in 1900, to 29% in 1950, to 50% in 2009, and it is projected to be 69% in 2050. Urbanisation brings many benefits, such as diversity, market efficiency, jobs, education, and health improvement (Christopher, 2008) and (Glaeser, 1998). It is these benefits that attract a continuous flow of people from rural to urban areas. However, due to the rapid pace of urbanisation, natural ecosystems are increasingly replaced by cities (Attwell, 2000 and United Nations Population Fund, 2007).

The consequences and problems of rapid urbanisation in developing countries, include; high levels of unemployment, graduate under-employment, general under-employment, poverty, housing problems, urban management and governance problems, shortage of urban services and facilities, industrialisation and environmental problems (Taylor, 2001; UNFPA, 2007; UNDESA, 2007 ; UN- HABITAT, 2007).

4.0 Challenges and constraints to urban sustainability

The Global Report (UN-HABITAT, 2009) debates that "the future urban planning must take place within an understanding of the factors shaping 21st-century cities". These factors include the environmental challenges of climate change, increased socio-spatial and social and spatial inequalities; and the economic challenges of uncertain future growth.

One of the most important environmental challenges is the need to reduce environmentally damaging activities; a change that can make the life of the citizens more convenient, more enjoyable and more prestigious. On the other hand, uncontrolled urban planning can and has resulted in social problems. According to Cities Alliance (2007), which is a universal coalition of cities and development partners assigned to supporting successful

strategies to poverty reduction in cities, a number of problems can be produced as a result of unconstrained urbanisation that include shortage of water, shelter, power and other necessities. Cities and towns are seriously affected by a number of key issues related to sustainability and urban planning. These issues include: environmental degradation, social disruption, underemployment, inadequate housing infrastructure, overcrowding, and services.

5.0 Smart Cities

The conceptual components of a smart city can be divided into three categories: technology, people and institution. A city can therefore be considered as smart when investments in these specific areas of development lead to sustainable growth and enhanced quality of life (Dawes and Pardo 2002).
According to the Mauritian Government, the Smart City should comprise of the following (Board of Investment, 2015)

- business facilities,
- residential properties
- affordable housing units for middle-income earners
- civic centres and leisure amenities
- high-quality public spaces
- day-to-day management services
- use of information and communication technology to sense, analyse and integrate the key information to provide intelligent urban management and services
- the use technology products or practices resulting in substantial operational cost savings through reduced energy consumption and utility costs

The Smart Cities are supposed to be self-sufficient in their basic requirements (energy, water) and are considered to be the **'Intelligent, Innovative and Sustainable Cities of the future' (BOI, 2015).**
Eight Smart Cities are to be created in the country as well as five 'technopoles' and this development would cover an area of about 7 000 acres (Business Mega, 2015).

Mauritius is a Small Island Developing State (SIDS) which covers an area of around 2000 km^2 is already urbanised to more than 50% (StatsMauritius, 2014). During the last years, about 33% of agricultural land has been converted to built-up areas (StatsMauritius, 2014). This trend will increase with the setting up of the Smart Cities which are found mostly outside settlement boundaries.

The National Development Strategy Plan, which was the prepared in 2004, had proposed a sequential approach for development, whereby development would be carried out outside settlement boundaries only based on accessibility and land quality in order to protect agricultural land and promote food security in the country.

6.0 Need for New Smart Cities

As Mauritius is a small Island State with limited land resources, it is important to analyse whether these Smart Cities are really sustainable and whether these Cities really need to be 'created'. There are five towns in Mauritius including the Capital City of Port Louis. Most of these towns date back to the French and the English Regime and can be considered to have a developed infrastructural framework at the service of the population. It is true that some of the cities are facing a decline due to the competition from new out-of-town shopping malls.

However, it would be considered more efficient and more sustainable, in an urban planning and environmental point of view, to regenerate the existing towns instead of creating new ones. Urban regeneration, also known as urban revitalisation, urban renewal and urban renaissance, is the field of public policy that addresses such urban issues as economic decline, urban decay, environmental decay, community dereliction, growing unemployment and numerous social problems caused by these urban issues. Lichfield (1992) defines urban regeneration as '*comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, social and environmental condition of an area that has been subject to change*'.

The creation of these new towns will necessitate large investment in terms of land, resources, and energy. Land will need to be cleared damaging the natural environment and the landscape of these areas which are actually under vegetation. Can a Small Island Developing State like Mauritius, allow the development of new cities while islands are facing the impacts of climate change worldwide?

7.0 Conclusion
It is true that ICT can play a significant role to improve the carbon footprint of cities by moving to a more intelligent use of energy and ICTs can enable a better use of energy in buildings , transport, street lighting. However, this does not necessarily mean that Smart Cities are Sustainable cities in the long term, especially if these Smart Cities have to be 'created'.

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REGIONAL DIFFERENCES IN E-COMMERCE DEMAND IN BELGIUM

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1. Introduction
E-commerce may enhance many important drivers of development. Benefits expected from e-commerce range from employment generation, fostering competition, innovation and enhancing the Single Market (EC, 2012). At the same time, logistics has been recognized as one of the crucial drivers to support the growth of e-commerce. The key is to understand the high demands that e-commerce poses on these logistics so that regions could optimally benefit from this increasingly important trend.

There remains a debate on the characteristics of the e-shoppers. While higher populations currently result in a higher share of urban deliveries, there seems to be a larger willingness to shop online in non-urban areas (Clark et al., 2015). In addition, given that new technologies are adopted earlier in centres of innovation, the largest increase is expected and observed in rural areas (Clarke et al., 2015; Farag et al., 2006). This implicates not only urban governments have to take the parcel deliveries into account, but that others have to do the same.

From a supply-side perspective, urban parcel deliveries differ from rural ones. Due to the lower density, the cost of delivering a parcel in rural areas can be three times as expensive as delivering the same package in a city (Gevaers et al., 2014). At the same time failed delivery attempts in urban areas are higher than in rural regions (van Duin et al., 2015). From the demand-side socioeconomic and accessibility differences are obvious between urban and non-urban areas.

In the following study, we investigate the relevance of socioeconomic variables in the spatial distribution of e-commerce deliveries in the northern part of Belgium. Furthermore, we attempt to contrast the urban deliveries from the sub-urban and rural ones. Despite the fact that the country exhibits a very high rate of urbanization (97,8%), it would be inaccurate to not differentiate urban from sub-urban and more rural areas (ILVO, 2006; UN, 2014). Finally, and contrary to preceding studies in the subject, in this paper we analyse e-commerce deliveries from recent highly detailed data provided by a parcel delivery company in Belgium and extrapolate comparisons in the characteristics of the receivers.

2. Methodology

The e-commerce data corresponds to the business to consumer (B2C) deliveries performed by a logistics carrier in a four-month time window in 2015. The information is aggregated to the level of a statistical sector. This is a sub-municipality spatial unit defined on the basis of social, economic, urban planning and morphological structures (Jamagne, 2012). The market share of the logistics carrier is estimated at 15% and a bias could exist because of regional differences in e-commerce behaviour and, therefore, logistics carriers. Nevertheless, because of an unavailability of this information due to privacy issues, this study assumes the available data can be considered representative for the total Belgian population.

The explanatory socioeconomic data used in this study dates from the 2011 census. It is a snapshot of the socioeconomic situation of the country at that time. In contrast to its predecessors, the dataset is constructed by combining various administrative registers instead of surveying (a subset of) the population. The influence of the range of socioeconomic variables on the response variable is estimated via a linear regression model (R Core Team, 2014). This model calculates the regression coefficients by minimizing the squared sum of the residuals (Chambers, 1992).

This study conducts an exploratory analysis on both the number of deliveries per km² and the number of deliveries per capita. While the former is independent from the size of the spatial unit, the latter cancels out the influence of the population in the unit of analysis. This is necessary to compare units with highly different numbers of population. In addition, it can be expected that the highest increase in e-commerce deliveries will take place in regions with high volumes per capita. This makes the variable interesting for logistics carries.

3. Results and Discussion

In Figure 1 we map the distribution of the total number of e-commerce deliveries per square kilometre in Flanders and Brussels. Here, the importance of the urban centres in the overall number of deliveries is explicit: the regions with large numbers of deliveries lie in urban areas. Quantitatively, this is reflected in a correlation factor of 71.13% between the population density and the number of deliveries per square kilometre.
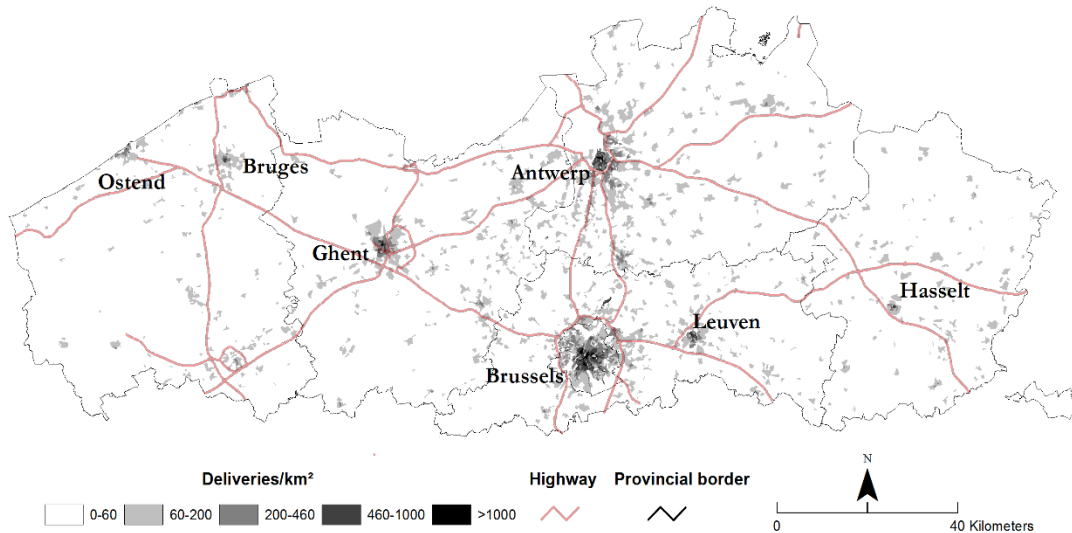
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Figure 1: Deliveries/km² per statistical sector in northern Belgium

Figure 2 then displays the geographical distribution of the number of deliveries per capita. Remarkably, the map indicates a very high participation of commercial and industrial statistical sectors, which often lie in the proximity of important highways. This makes us conclude that an extra type of area, different from the generally accepted urban and sub-urban ones, is necessary when analysing e-commerce patterns. These areas with very high "delivery demand behaviour", i.e. deliveries per capita, occur in highly urbanized areas with very low population densities. The emergence of these regions can be due to high e-commerce activities of companies, or to employees who get their parcels delivered at their working place.
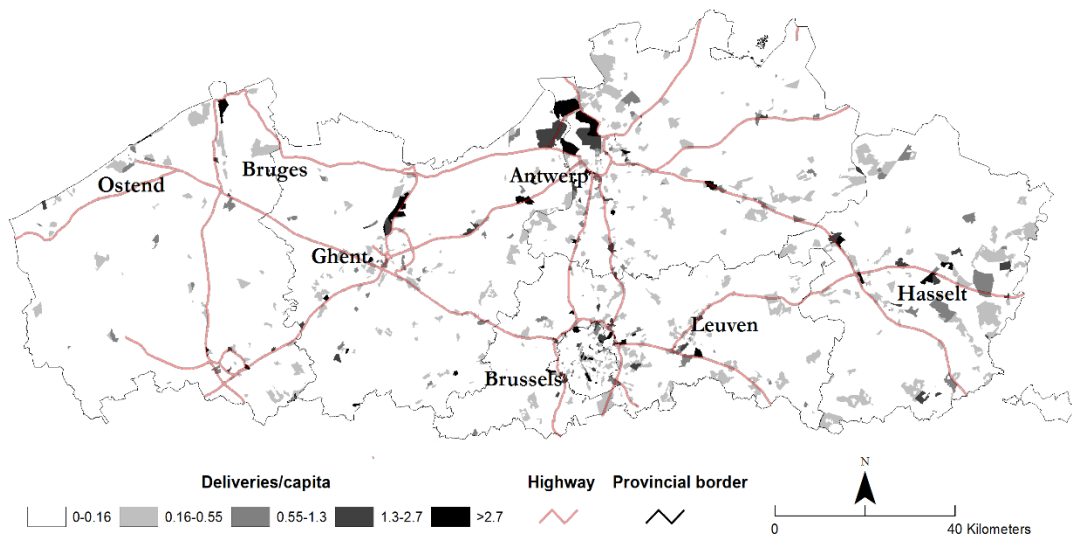

Figure 2: Deliveries/capita per statistical sector in northern Belgium

Since the concentration of the amount of deliveries per square kilometre will always be high in cities, it becomes less interesting to find the relations with different socioeconomic variables in order to model its spread. Therefore only a regression with the deliveries per capita as response variable is conducted. The results of the calculation are shown in Table 1. In this case, all explanatory variables are used to model the number of deliveries per capita.

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Table 1: Estimated coefficients with t-values explaining deliveries per capita

	Coefficients		t value	Pr(>|t|)
	Estimate	Std. Error		
(Intercept)	3,04E+02	6,44E+01	4.728	2.30E-06*
Pct. self-employed	-1,78E+02	4,17E+01	-4.257	2.09E-05*
Population density	-3,67E-02	2,23E-03	-16.459	< 2E-16*
Pct. foreigners	3,34E+02	2,79E+01	11.971	< 2E-16*
Pct. man	1,28E+02	6,66E+01	1.920	0.0549
Pct. unemployed	1,96E+02	1,67E+02	1.175	0.2399
Pct. students	1,05E+03	8,37E+01	12.528	< 2E-16*
Pct. retirees	-4,42E+02	7,37E+01	-6.001	2.03E-09*
Average age	1,80E+00	1,19E+00	1.504	0.1326
Average household size	-1,22E+02	1,02E+01	-12.026	< 2E-16*
Average income	-8,07E-04	6,21E-04	-1.300	0.1936

significant at .001 level

Although a reasonable amount of variables explain a significant part of the variation in the response variable, the R^2 of only 0.08123 proves one linear model for the whole study area is insufficient. Instead, in order to be able to predict the spatial pattern of the deliveries per capita, it will be necessary to define different coherent e-commerce delivery zones, each with its own regression model. Based on the first results of this study, we propose in Table 2 a preliminary typology of four different e-commerce delivery zones for northern Belgium. The urban-rural differences will distinguish zones with higher and lower deliveries per square kilometre. Next, the population density then aids the differentiation between the residential and commercial/industrial areas, which can help us to split the first zones into the ones with larger and lower volumes per capita. This last step is however still work in progress and employment data is needed to validate this typology.

Table 2: Typology of e-commerce delivery zones in northern Belgium

Indicator	Urban high deliveries	Urban business deliveries	Rural deliveries	Industrial zone deliveries
Deliveries per km²	+	+	-	-
Deliveries per capita	+/-	TBD	+/-	+
Population density	++	+	-	--

4. Conclusions

Both qualitatively -via the map comparison- and quantitatively -by calculating correlations- it is clear that the concentration of e-commerce deliveries is strongly related to the population density in a certain area. From this perspective, cities remain the most important regions for logistics carriers at the moment.

However, since a higher share of the increasing e-commerce demand is expected to occur in non-urban areas, the deliveries per capita could learn us something on the characteristics of the e-shoppers themselves. But, we have to take into account that the available data represents e-commerce deliveries instead of the actual demand.

This is reflected in the second map, where industrial zones show high values for the deliveries per capita. Nevertheless, it is impossible to derive the actual buyers of these parcels.

Despite this fact, for a logistics carrier the spatial pattern of the deliveries is far more interesting than to know who is buying those packages. Therefore the need to model the deliveries per capita remains a priority. This study proved that with the available data, it is yet impossible to construct one model for the whole study area, which calls for a typology of e-commerce delivery regions.

Hence, in a first attempt four different regions were identified by combining different combinations of high/low deliveries per square kilometre and per capita. These regions are characterized by homogeneous characteristics

of e-commerce deliveries. By creating different models for each region, it should be possible to significantly model the spatial pattern of e-commerce deliveries in the whole study area.

However, to continue this process, data on the employment situation in the spatial units is necessary.

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REGIONAL VARIATION IN THE DISTRIBUTION OF SOCIAL ISOLATION AMONGST OLDER AUSTRALIANS

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Regional studies globally has a strong focus on understanding the causes of variation in the economic performance and wellbeing of regions and in part this acknowledges that the strength of the local or regional economy plays a determinant role in shaping quality of life. Regional research has been less active in considerable spatial variation in other factors that are critical to individual and societal wellbeing. For example, the regional studies community has been relatively absent from the debate on the social determinants of health and how these influences vary spatially. This paper considers the results of a cross sectional survey of Australians aged 65 and over that focussed on social connections and wellbeing. It examines regional variations in the incidence of social isolation within the older population. It finds that while the incidence of self-reported social isolation amongst older persons is broadly consistent with earlier studies, it demonstrates a spatial patterning that is unexpected.

Keywords: social isolation, regions, ageing, Australia, social capital

Regional studies globally has a strong focus on understanding the pattern and causes of variation in the economic performance and wellbeing of regions and in part this priority acknowledges the strength of the local or regional economy in shaping quality of life. Regional research has been less active in examining the

considerable spatial variation in other factors that are critical to individual and societal wellbeing. For example, the regional studies community has been relatively absent from the debate on the social determinants of health (Kavanagh et al 2013) and how these influences vary spatially. This paper considers one of the major determinants of health and wellbeing for older persons – social isolation. Social isolation is often overlooked as an influence on wellbeing despite the fact its impact can be as significant as other well known risk factors to health and wellbeing. For example, one systematic review concluded the absence of supportive social relationships for older people had an impact on their health equivalent to smoking heavily and that being without social connections in older age was worse than drinking at unsafe levels. Moreover, social isolation was found to be more harmful than not exercising, and twice as harmful as obesity (Holt-Lundstad et al 2010).

This paper considers the results of a cross sectional survey of Australians aged 65 and over focussed on social connections and wellbeing. It questions our a *priori* assumptions of where we would anticipate social isolation to be most acute in a nation as large and sparsely settled as Australia, before moving on to examine regional variations in the incidence of social isolation within the older population. It finds that while the incidence of self-reported social isolation amongst older persons is broadly consistent with earlier studies, it demonstrates a spatial patterning that is unexpected.

Social Isolation, Health and Wellbeing
Australia, as with many developed nations, has an ageing population that raises fundamental questions about national economic and social wellbeing (Commonwealth of Australia 2010). To date, economic wellbeing and burgeoning health care needs have been considered the most important questions associated with the structural ageing of the population while many of the social dimensions of ageing have been ignored. There is increasing recognition, however, of the critical role of social networks and social integration for the health and wellbeing of older Australians (Commonwealth of Australia 2008). Cross national research has highlighted the prevalence and depth of impact of social isolation amongst older persons (de Jong Gierveld & Havens 2004). Studies of its incidence in Australia suggest that fully 20 per cent of older Australians are affected by social isolation and that it is a major cause of social exclusion amongst this cohort (Findlay & Cartwright 2002). The incidence and impact of social isolation is likely to increase as the Australian population ages and as the baby boom generation retires. Notably, baby boomers are more likely to be affected by social isolation in older age than previous generations because of their lower marriage rates, higher divorce levels, reduced fertility, more mobile employment and housing careers and tendency for self-reliance. There has been growing recognition of the detrimental effects of social isolation on the health and life chances of many older Australians, as well as the savings potentially available to the community from successful preventative programs that reduce social isolation and build a stronger sense of connectedness. The social isolation of many older Australians has cascading impacts throughout society in the form of an increased burden of care on their children and other relatives, greater demands on health services, a reduced sense of community and a greater need for acute interventions by local governments, housing providers and other welfare services.

Social Networks in Metropolitan and Non Metropolitan Australia
Many of the factors associated with social isolation are beyond the individual's control and reflect the processes and structure of modern society, including the functioning of communities, prejudices such as ageism, sexism, and racism, and the confluence of rising individual self-sufficiency and declining localised support within society (Peel 2000). Modern society's collective responsibility to care for others, in particular its most vulnerable, has been reduced in our pursuit of privacy, self-sufficiency and independence (Beck 1992). As well as having an impact on the individual, at a society-wide level, social isolation amongst older persons has profound consequences, including the absence of community cohesion; neighbourhood deterioration; increased use of health services and medications; a greater incidence of ageism which in turn results in an inadequate focus on older people in government policy/resource allocation; and limited engagement with active citizenship amongst older persons and the loss of the benefits if confers for the individual and the community (Pillemer et al 2000). The social isolation of older persons can also impose greater demands on family members who are called upon to provide more intensive care for their parents, grandparents or other relations. Productive social interventions are therefore a necessity in modern society for those whose social networks are insufficient to maintain an acceptable quality of life.

Importantly, social connectivity is likely to vary by location and this link between social connection and geography has been long acknowledged. In the 19th Century the German philosopher and sociologist Ferdinand Tonnies distinguished two types of social interaction – gemeinschaft and gesellschaft – with the former

commonly associated with traditional rural communities and in-depth personal interactions that often develop over a lifetime. Gesellschaft, by contrast, was associated with modern, urban societies, with social exchange predicated on a more instrumental set of relations (Tonnies and Harris 2001). More recent Australian work has considered differentials in social capital between urban and rural communities (Woodhouse 2006; Tonts 2005; Onyx and Bullen 2000; Hodgkin, 2012; Baum et al 2009; Atherley 2006). Almost without exception, these studies have found greater stocks of social capital within Australia's rural communities rather than in urban settings. As might be anticipated, rural and remote regions have been found to be richer in bonding social capital – the linkages between persons with a number of similarities - when compared with the major cities, but have lower levels of bridging social capital - connections with more diverse individuals (Kim et al 2006). There are strong grounds to anticipate *a priori* that social isolation amongst the older population will be less evident in rural areas when compared with the major cities. However, while this assumption might hold true in most developed nations, there are grounds to question this assumption for Australia given the very substantial distances between – and within – settlements across the continent. Davis and Bartlett (2008) noted loneliness is a growing risk for many older Australians living in rural communities and that

> Older people in rural communities have become marginalised by longstanding misconceptions about rural life and urban-centric policies (Davis and Bartlett 2008 p. 6).

Moreover, Winterton and Warburton (2011) noted that older people living in rural communities are subject to both the disadvantages of rural living and the additional burden of often acute health and mobility issues associated with ageing. The disadvantages of living in a rural setting in Australia identified by Winterton and Warburton included a greater incidence of poverty, lower levels of population health, poorer access to health services, lower levels of education and poorer health behaviours, and discrimination. These difficulties evident in rural and remote settings across Australia suggest an erosion of the social connections for older Australians and the potential for further alienation in ageing.

Measuring and Mapping Social Isolation Amongst Older Australians
Social isolation amongst older persons is a significant challenge at the level of the individual, the family, the community and the nation as a whole. Indeed, it could be argued that it is a problem that spans the boundaries of developed and developing economies as each passes through the second demographic transition and associated processes of urbanisation and population ageing (Lesthaeghe 2010). The spatial distribution of social isolation is important at both a policy and theoretical level, as regional variations in the incidence of social isolation challenge our understanding of causation and association at the community level, while also demanding a targeting of resources and responses by governments. This section considers the ways in which the incidence of social isolation is measured at the population level and its incidence at the regional scale across Australia. After considering the metric used to measure the incidence of social isolation, it examines its spatial patterning using the outcomes of a 2014-15 on-line survey completed by more than 1700 Australians aged over 65.

Figure 1: Distribution of Survey Responses by Postcode, Australia
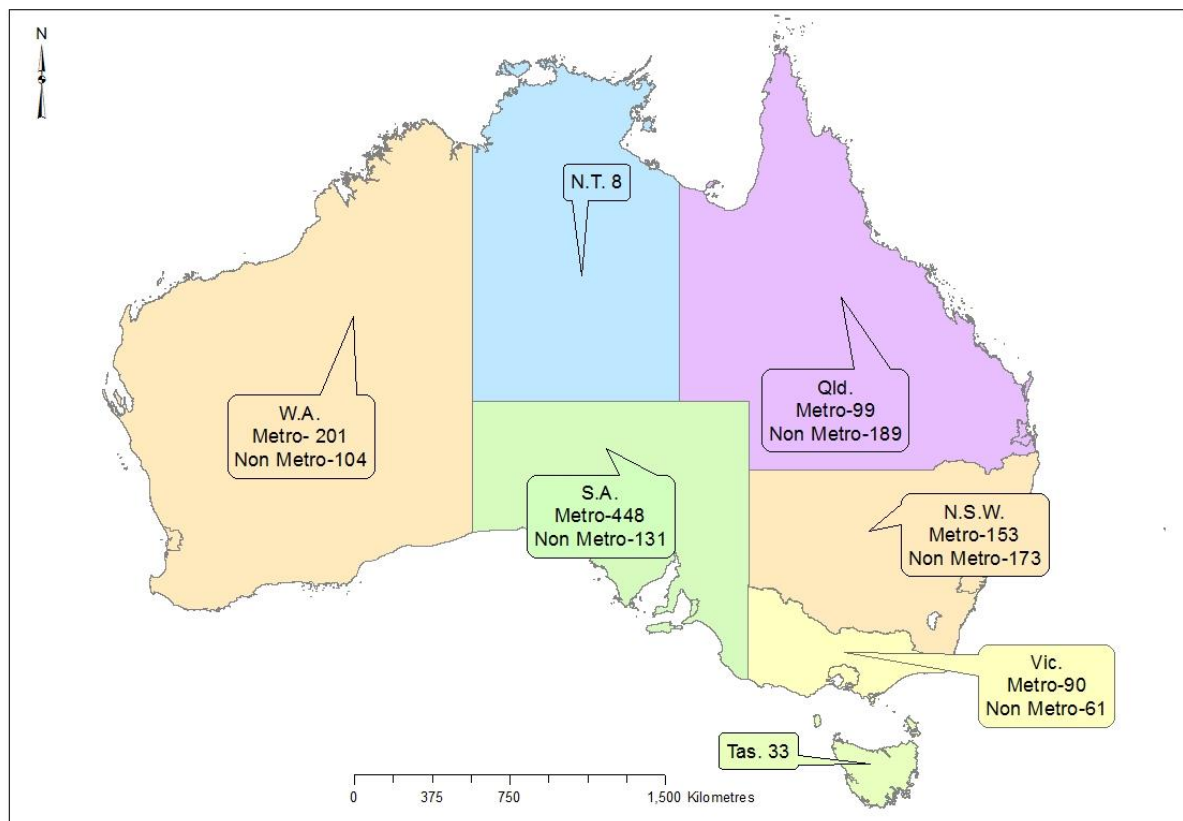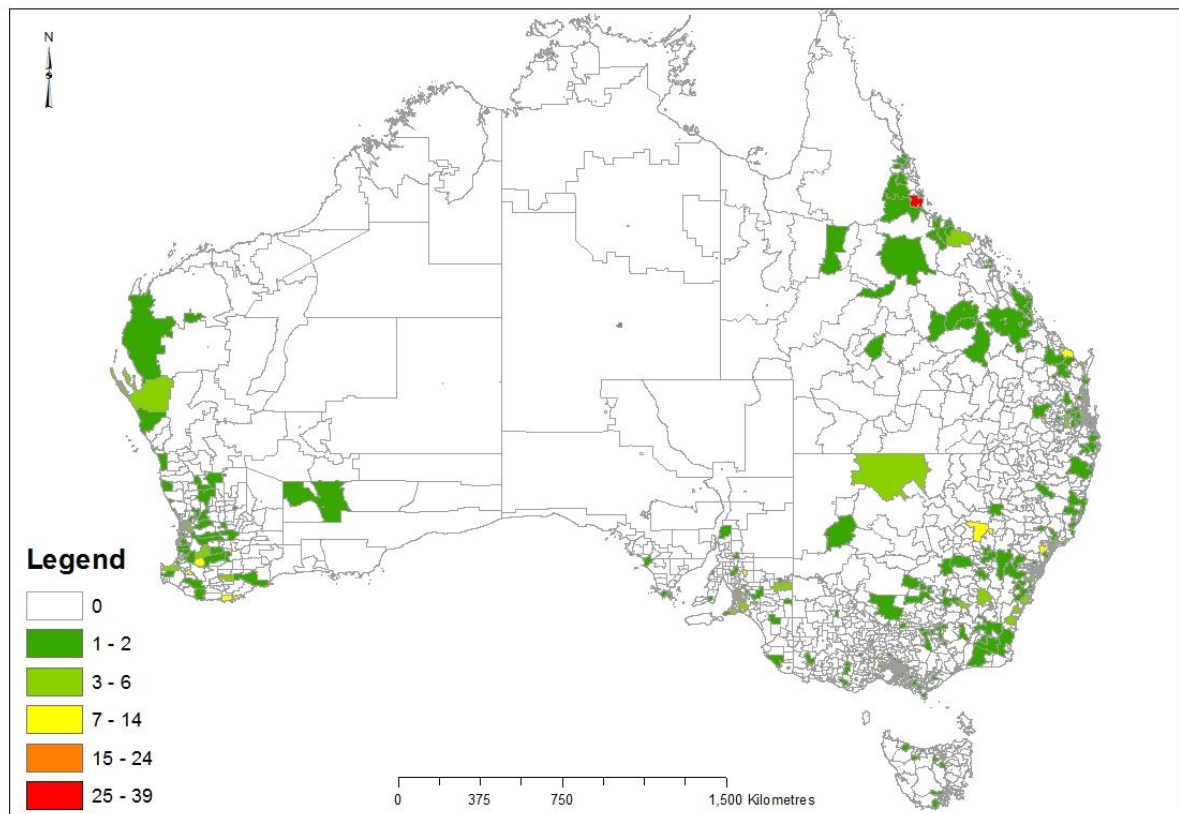

Figure 2: Respondents by Postcode for Non Metropolitan Australia

Overall, 58 per cent of respondents to the survey lived in metropolitan Australia and the remaining 42 per cent were resident in rural or remote regions. To a degree, therefore, non-metropolitan respondents were over-represented within the data collection when compared with the general distribution of the Australian population (ABS 2011). When examined by broad metropolitan/non-metropolitan region, Adelaide was found to be substantially over-represented while the nation's two largest urban centres – Melbourne and Sydney – were under-represented (Figure 3). This bias reflects the basis of the research team, headquartered in Adelaide and without an academic team member based in the NSW.
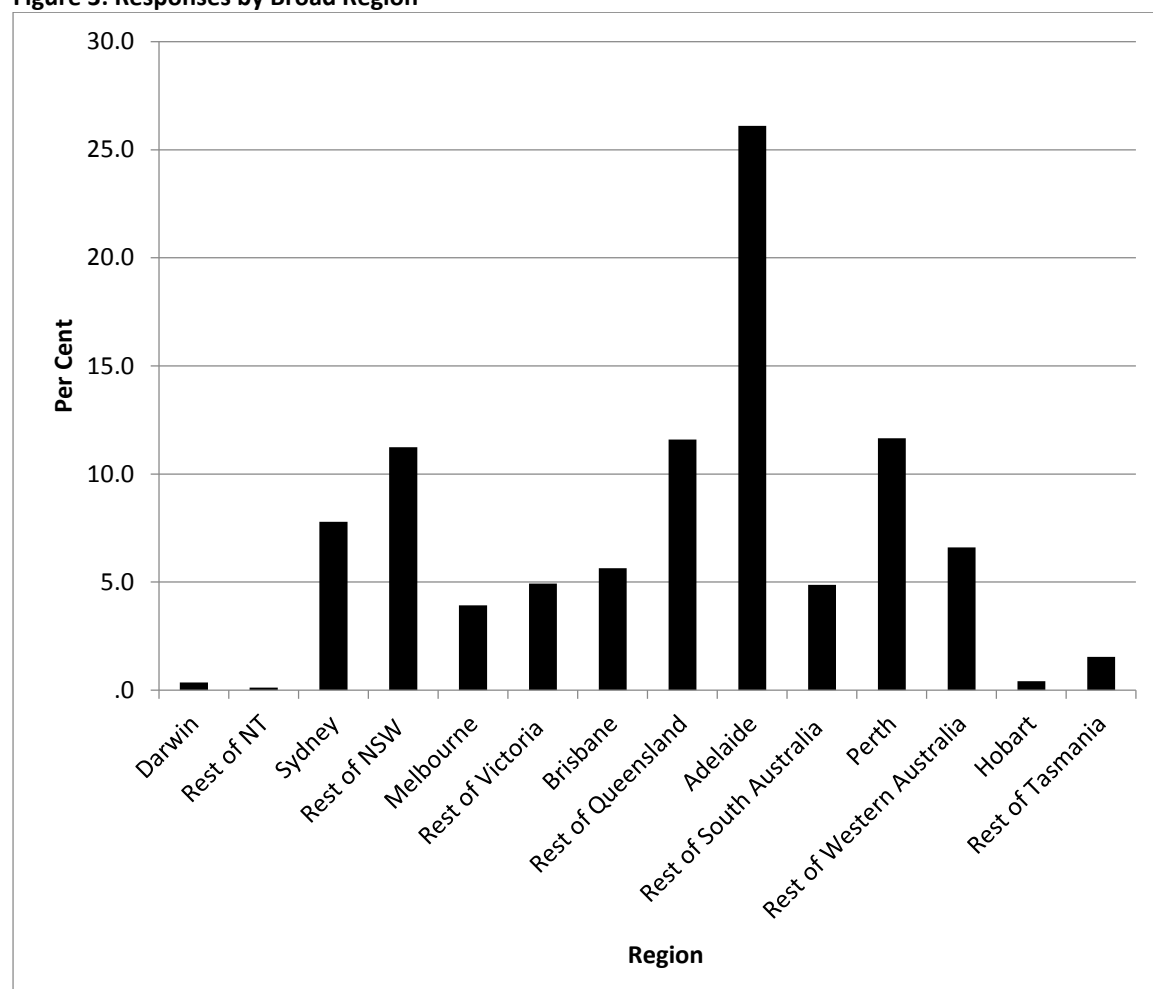
Figure 3: Responses by Broad Region

Table 1 presents the results of the calculation of the Friendship scale for all Australia.

Table 1. Friendship Scale in Five Categories

	Number	Per Cent
Very Isolated	128	7.7
Isolated	185	11.2
Some Isolation/Connected	242	14.6
Socially Connected	412	24.9
Very Connected	685	41.5
Total	1652	100

The data presented in Table 3 indicates a level of social isolation amongst older Australians of just under 19 per cent, a near match with the 20 per cent estimate by Findlay and Cartwright (2002). Across Australia, there was no appreciable difference in the level of social isolation between metropolitan and non-metropolitan regions in aggregate, but a very different picture emerges when we consider a regional breakdown by state (Figure 4).

Overall, the patterns of social isolation amongst the older population demonstrated a bi-modal distribution spatially, the highest rates occurred in non-metropolitan South Australia and non-metropolitan Western Australia (22.5 and 22.0 per cent respectively), and metropolitan Sydney and Melbourne (22.4 and 21 per cent). Social isolation amongst the older population was therefore most acute in Australia's two largest cities, and in the two mainland states that are distinguished by large, remote landmasses and relatively few major settlements outside the capitals (Beer and Clower 2009). The island state of Tasmania, by contrast, recorded the lowest level of social isolation amongst older Australians at zero for the capital city of Hobart and seven per cent for the areas outside the capital. Tasmania is distinguished from many other parts of Australia, by a denser pattern of settlement, with a relatively large number of small communities. This urban development pattern appears to be 'protective' with respect to social isolation. Queensland, with its large land mass and dispersed network of large and small settlements, recorded higher rates of social isolation in its rural and regional areas than in the capital of Brisbane. Some 14 per cent of older Brisbane residents were estimated to be socially isolated according to the Friendship scale, compared with 19 per cent of rural and regional residents.
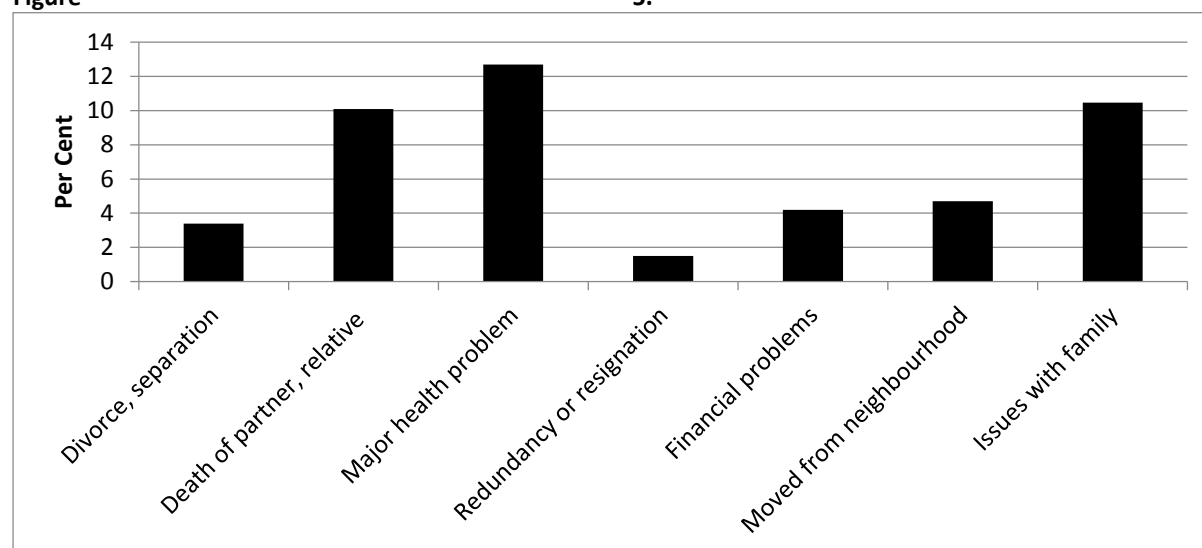
Figure 4. Percentage of the Older Population Socially Isolated by Broad Region
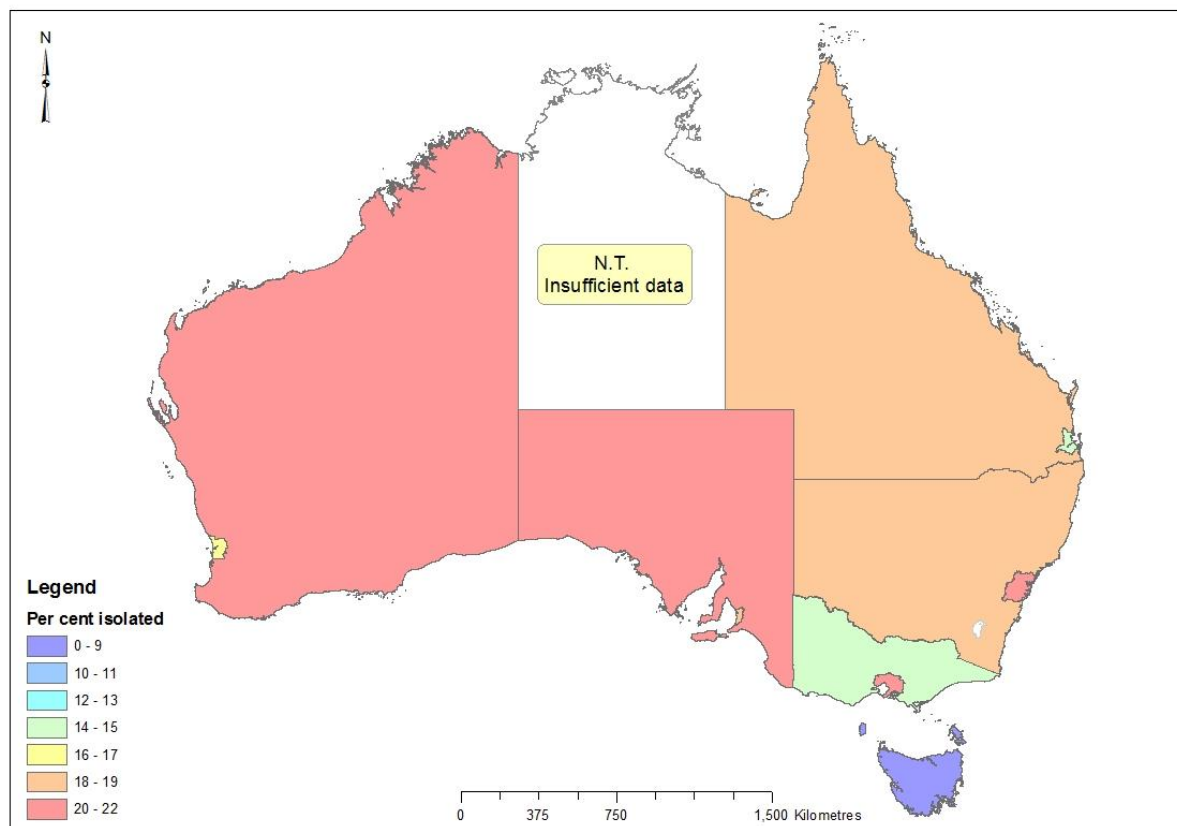
Figure   5.   S

self-reported Causes of Social Isolation

Additional insights into the processes underpinning social isolation can be obtained from the data on self-reported contributory factors (Figure 5). Personal circumstances clearly exerted a significant impact on the incidence of social isolation, with major health problems, issues with family members and the death of a partner or close relative, prominent in the lives of older persons who felt disconnected from wider society. Financial problems and movement away from a familiar neighbourhood were also prominent factors in the lives of the socially isolated, which suggests both a social gradient to this phenomenon and a possible explanation for the higher levels of social dislocation in metropolitan areas. Rural residents living in smaller communities are likely to have stronger relationships with their neighbours, and may be less likely to move in older age.

Table 2. Do You Feel Your Access to Transport Limits your Ability to Get Out and About?

	Metropolitan	Non Metropolitan
	%	%
Not at All	61.1	64.8
Slightly	23	20.8
Quite a lot	8.9	8.2
A lot	7.0	5.6

Somewhat surprisingly, physical transport difficulties were less pronounced in non-metropolitan regions than in the major urban centres (Table 2). Access to transport is an appreciably greater challenge for older Australians in metropolitan areas than for their comparators outside the capitals, despite the potentially greater distances to be covered and the absence of public transport in many rural areas. This difference may well be a function of greater levels of community support for older people in rural and regional localities, as well as difficulties in gaining access to public transport in the major cities. Car ownership and driving may also be less attractive in the metropolitan centres because of potentially higher costs and greater traffic levels.

Conclusion
This paper set out to understand the broad-scale regional distribution of social isolation amongst Australia's older cohorts. It found that just under 20 per cent of the respondents to our survey were socially isolated and this figure was consistent with earlier estimates of the level of social isolation amongst older Australians. The paper also found that the problem of social isolation was most acute in the nation's largest cities and in the sparsely settled regions of non-metropolitan South Australia and Western Australia. The data do not support the suggestion that social isolation is an inevitable outcome of living in either a capital city or a rural or remote region. What is clear from this analysis is that social isolation is more prevalent in both the largest urban centres and in the most substantial, and sparsely populated, territories. Regional cities and towns would appear to offer

a better social environment for older residents, and while the triggers of social isolation are often personal factors – the death of a partner or close relative, the onset of a major health issue et cetera – the attributes of the community in which they live appear to either protect against isolation or exacerbate the problem. The data suggest that moving away from a familiar neighbourhood – including retirement migration to the coast or other amenity destination – carries with it an elevated risk of social isolation. Perhaps unexpectedly, transport was a greater challenge for metropolitan residents than those living in non-metropolitan regions, despite the greater accessibility of more urban locations and greater access to public transport. Potentially, better transport services for older residents could reduce the incidence of social isolation amongst older Australians, as could explicit 'community building' strategies that address the needs of older residents and integrate them with all members of the local population.

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TRAVEL-TO-WORK AND TRAVEL-FOR-WORK: BLURRED BOUNDARIES AND COMPLEX PATTERNS OF WORK-RELATED TRAVEL

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Introduction

This paper explores the complex patterns of travel-to-work and travel-for-work which increasingly characterize employment in highly skilled occupations such as managerial, professional and associate professional occupations (Wheatley, 2013; Jeong et al, 2013; Gustafson, 2006, 522). Given the frequency and complexity of these forms of work-related travel it is important to understand their impact in relation to the complex routines of work and time use among highly skilled workers. This paper specifically seeks to answer the following research questions:

1. How do workers perceive time used in travel-to-work and travel-for-work?
2. How do employer expectations and ambiguity over ownership of travel-to-work and travel-for-work affect travel experiences?
3. What impacts do travel-to-work and travel-for-work have on the careers, time use and well-being of highly skilled workers?

Work, Travel and Subjective Wellbeing

Travel-to-work, the commute, acts as a bridge between home and work. It is necessary work-related time-use (Wheatley and Wu, 2014, 449). It varies in distance and complexity throughout the life-course, incorporating at certain stages activities linking travel and family e.g. the 'school run'. This time-use is perceived as both 'productive' and a 'waste of time' (Basmajian, 2010, 76). The commute is often particularly complex for highly skilled workers who are expected to demonstrate high levels of mobility, but may face difficulties where household responsibilities are present, or both partners in households pursue careers creating tension in regards to decisions over residential location (Wheatley, 2013).

Travel-for-work is work-related travel undertaken in order to fulfil tasks of employment. Driven by globalization and the increasingly unbounded nature of paid work, it is increasingly common, especially among highly skilled workers (Jeong et al, 2013, 150; Gustafson, 2006, 522). It incorporates (inter)national business travel and certain

forms of teleworking. Travel-for-work differs from the commute as it can be irregular, and involve periods of absence. It presents travellers and their households with a range of specific challenges and benefits (Nicholas and McDowall, 2012; Gustafson, 2006, 2014). Employers may not explicitly require frequent (inter)national travel for career progression, but there may be a stigma attached to those who do not demonstrate expected levels of mobility. Difficulties may be faced in achieving desired levels of mobility, as a result of obligations present at both home (e.g. children, ill/elderly relatives/friends) and work (e.g. workloads). Further, it has been suggested that long-distance and overnight travel may have particular implications for both working conditions and family relations (Bergman and Gustafson, 2008, 192).

Travel affects well-being – referring to the self-assessment of an individual's overall wellbeing and relevant domains such as satisfaction with job and other aspects of life – in a range of ways (De Vos et al, 2013): through potential travel, activities during travel, participation in activity enabled by travel (work or leisure), and travel for leisure purposes where travel is the activity which itself acts as a source of utility (Moktharian and Solomon, 2001).

Travel-to-work is often perceived as generating dissatisfaction. Research has shown that the commute represents one of the least appreciated activities performed during the day (Kahneman et al, 2004; Wheatley, 2013). Lengthier commutes may reduce 'life' satisfaction, off-setting any benefits individuals receive from 'attractive' residential locations distant from their workplace (Stutzer and Frey, 2008). Other recent research (see Ettema et al, 2012, 219-20), though, has identified that commutes can be viewed positively, although relative satisfaction is heavily associated with mode of transport; levels of stress, boredom and other negative feelings, and; exogenous factors (e.g. road maintenance). Satisfaction may be particularly influenced by the extent to which the commute is perceived by the individual to be productive (Basmajian, 2010; Lyons and Urry, 2005), although conflicting evidence is found in this regard (see Ettema et al, 2012).

In contrast to the subjective wellbeing effects of travel-to-work there currently remains an absence of research which focuses on travel-for-work. Research in the psychology literature has considered the impacts of travel-for-work in regards to stress and impacts on couple's relationships (see Holley et al, 2008; Gustafson, 2012, 2014), but studies have not examined the broader time-use and subjective well-being effects of this form of worker mobility.

Data and Methods

Large-scale national data-sets collected within the UK do not currently capture both travel-to-work and travel-for-work data and responses to questions regarding subjective well-being. This paper, therefore, draws on primary data collected from the recent small-scale *Travel-for-Work Research Project* which focused on patterns of travel-to-work and travel-for-work among highly skilled workers, conducted in the UK Midlands in 2015. The research employs a mixed method approach combining quantitative and qualitative elements. This follows Brown et al's (2012) call for "interdisciplinary, mixed-methods" in the investigation of subjective well-being. Specific details of the two phases of the project are as follows:

- *Online survey of highly skilled workers*
  Primary data was collected from a sample of highly skilled workers using an online quantitative-qualitative questionnaire, drawn from a large database of contacts in senior roles within UK Midlands-based organizations (from private, public and voluntary and community sectors). The survey comprised open and closed questions, focusing on travel behaviours, subjective well-being measures, and individual and household demographic characteristics. The survey received a total response of 141 individuals (after the removal of invalid/incomplete responses) from 70 different organizations ranging from SMEs to large multinationals. Approximately 61.4% of the sample are men. The average age of the men and women sampled is 46.3 and 40.4 respectively, and approximately 48% of respondents report the presence of dependent children. Around 90% of the sample report working full-time, and 72.3% work in the private sector. All report being employed in highly skilled occupations, including senior managerial and professional occupations. Average gross income of the sample is equal to £57,244.

- *Semi-structured follow-up interviews*
  The survey data is complemented by data captured through follow-up semi-structured interviews using a stratified 10% sub-sample of the survey, comprising 14 highly skilled workers. This provides a cross-section of workers by gender, age and other characteristics, offering insight into travel-to-

work and travel-for-work among those who do/do not report family responsibilities, in different occupations and career stages. The interviews captured perspectives pertaining to the preferences and experiences of travel-for-work including frequency of travel, ownership of travel time, work-family conflict, and well-being.

Empirical Analysis

Analysis of the evidence collected for this paper suggests that, while there are impacts that are common to travel-to-work and travel-for-work, there are some notable differences between these types of activity. Existing research is indicative of the commute generating widely negative impacts (Kahenman, 2004; Stutzer and Frey, 2008). It is often referred to as a 'waste of time' (Basmajian, 2010, 76). The analysis of our data supports this existing research, evidencing in particular the practical challenges associated with using the commute productively given the continuing reliance on the car as the main method of transport to work. Negative impacts are particularly pronounced among those reporting lengthier commutes, as this reduces available leisure time, and time with family. Where commutes are viewed more positively, this is associated with use of alternative methods of transport to work which either provide health benefits (walking, cycling), or enable the commute to be used more productively (travelling by train). Mode of transport does appear a key factor in determining the impacts of the commute (Ettema et al, 2012). These findings suggests there are real benefits to be had for workers where they are able to use an alternative to the car. Household responsibilities, especially among women (Wheatley, 2014), and residential location, however, limit the options for many workers rendering the commute a widely negative experience.

Travel-for-work, in principle, generates a number of the same negative impacts as the commute. However, the impacts of this form of travel are more nuanced, and impacts not wholly negative. Respondents report travel-for-work as providing opportunities to extend professional networks, gain exposure to other cultures, and 'get out of the office'. Negative impacts, in particular, are centred on reduced time with family. Workers also widely report that travel time is not recognised as work-time (or rewarded with TOIL or similar compensation), but this time is nevertheless often used to work as a way of passing time, and avoiding work overload following return from travel. Evidence from respondents contributes to our understanding of travel-for-work through identification of the relevance of overnight stays, over and above general frequency of travel, as a key factor in driving both the positive career impacts reported, but also the negative effects on time-use (including satisfaction with working hours, amount and use of leisure), family, health and overall happiness. The relative infrequency of travel-for-work among many workers mediates the impacts, but where travel, especially that requiring overnight stays, is reported frequently the impacts of this travel appear compounded.

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CYCLING TO MODERNITY: MOSCOW CYCLING POLICY AS A CASE OF INTERNATIONAL POLICY TRANSFER

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Introduction

Cities no longer have to "invent a bicycle" when designing urban policies - many effective policies have already been implemented elsewhere. In academic literature the process of studying policies in one geographic, political and institutional context and applying them in a different context is referred to as *policy transfer* (Dolowitz & Marsh 2000). While policy transfer academic literature is growing, transfer of innovative urban policies in post-socialist cities remains under-investigated (Peck 2011, Stead et al. 2008). This paper looks at policy transfer in the largest post-socialist city – Moscow, Russia. The focus is on Moscow's policy that aims to promote the use of bicycles for transportation.

Theoretical framework - Policy transfer

The Dolowitz and Marsh (2000) framework guided previous research on international policy transfer in transportation and urban studies (Marsden & Stead 2011, Timms 2011). Urban geographers have used the policy transfer concept and interpreted it using the constructivist perspectives of *assemblages, mobility and mutation.* Policies are rarely copied directly - they change in the process of transfer from one context to another (Evans 2009, Freeman 2012, Hamedinger 2014). A policy transferred to a new city is transformed due to new context, rules and regulations. Cities and policies are viewed as *assemblages* of different interrelated parts that constantly change and influence each other (Evans 2009, Peck 2011, McCann & Ward 2013). Cities are agents of learning, and studying individual cities and policies is important for understanding policy transfer (McCann & Ward 2013, Hamedinger 2014).

Why urban cycling policy

Rapid technological progress and talent mobility drive global cities' competition for financial investments and human capital (Barna 2013). In this competition, cities increasingly focus on creating sustainable and healthy communities, and the use of bicycles for transportation is among the solutions (Barna 2013). Urban cycling benefits the environment, advances urban liveability and helps ease traffic congestion (Forthys & Krizek 2010). While Western cycling policies are relatively well-studied (Forsyth & Krizek 2010, Pucher & Buehler 2012), research on similar developments in the Eastern European cities with a legacy of centralized planning is limited (Peck 2011). Many of these formerly socialist cities promote the use of bicycle for transportation (WHO/UNECE 2009, European Conference of Transport Ministers 2014). The case of a cycling policy in Moscow, the largest Eastern European city, facilitates understanding of the role of policy transfer in the development of innovative urban policies.

Cycling policy in Moscow

In the years of centralized planning, Moscow built an extensive public transportation system and pedestrian infrastructure - sidewalks, promenades, boulevards, and parks (French 1995, UN-Habitat 2014). The combined share of its public transit and non-motorized modes is high compared to other global cities (Figure 1). Moscow's transportation system met the needs of its mostly carless residents until the 1990s. Then a transition from centralized to liberal planning led to an exponential growth in car ownership accompanied with fervent road construction (Argenbright 2008,

Kolossov & O'Loughlin 2004). In less than 20 years Moscow became the most congested city in Europe (TomTom InternationalBV 2013). By 2010, the city had 3.5 million cars but only 800,000 dedicated parking spaces (Blinkin 2011). Unregulated parking created obstacles for pedestrians (Gehl Architects 2012).

Figure 1. Share of public transport and non-motorized transport in the transport balance, Moscow compared to other global cities (adapted from Strelka KB 2014: 469)
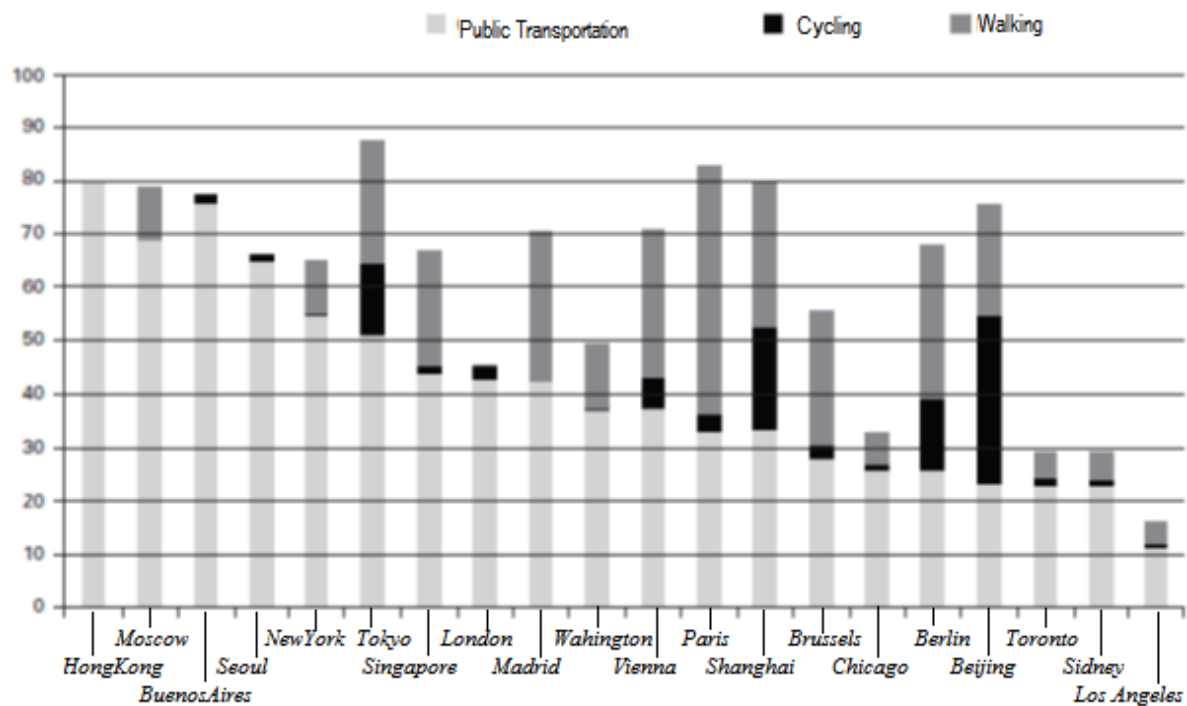
Since 2010, following a reshuffle in the Mayor's office, Moscow sought alternatives to car-oriented development. Based on international experience, promotion of public transit, walking and cycling was included in the Moscow Transportation Development Program 2012-2016, the Municipal Improvement Program "My Streets", and the 2025 Moscow City Strategy "Moscow: A Comfortable City for People to Live In" (Moscow Urban Forum 2015). The Moscow Department for Transport and Road Infrastructure Development (Transport Moscow), the Transport Research Institute and experts from Milan and Vienna developed a cycling strategy to increase the share of cycling in all trips from 0.04% in 2013 to 1% 2020, build 700 kilometers of bike lanes, including an 80 kilometer Green Circle connecting 15 parks and 20 subway stations, provide parking, and integrate cycling with public transportation.

New York's "pilot" approach was useful in implementing an on-road bicycle lane on the Boulevard Ring in central Moscow. Similarly to London, Barcelona and Paris, a public-private partnership between the Bank of Moscow and the municipal government introduced the bike sharing system *Velobike* (300 bicycle rental stations with 2,600 bicycles). The movement Let's Bike It and Transport Moscow co-organize *bike to work* campaigns and mass bike rides that gather up to 25,000 cyclists. Cycling activists participate in policy planning and monitoring, and public opinion is monitored via public polls. In 2014, the Federal Traffic Code was amended to include cycling infrastructure, rules prioritizing cyclists, road signs and markings, and cyclist safety requirements.

Policy Transfer Process

Similar to previous transportation policy transfer research (Timms 2011, Van den Bergh et al. 2007), Moscow's cycling policy was investigated using the "Dolowitz & Marsh questions" (Timms 2011). For each question Table_1 provides explanations from academic literature and Moscow examples. This table is based on a review of official documents, publications and media releases, and on observations made during meetings and events in August-October 2015.

Table 1. A policy transfer framework (adapted from Dolowitz&Marsh 2000: 9):

Policy Transfer Questions	Explanation (Dolowitz&Marsh 2000, unless indicated otherwise)	Moscow 2010-2015
1. What is transferred?	Policies (goals, contents, instruments), programs, and lessons (positive and negative)	Moscow had not had a cycling policy before 2010, so, arguably, all elements of the cycling policy 2020 were informed by international experience.
2. Why transfer?	"Voluntary – coercive" (want to – have to) continuum	Introducing cycling was motivated by the need to improve the transportation system, and was driven by local experts, activists and the city government. No external pressures were applied.
3. Who is involved in the policy transfer process?	"Government is no longer the expert" (Evans 2009:257). Local and international non-governmental actors are involved in policy transfer (Benson&Jordan 2011).	Officials, civil society, private sector, academics, local and international experts and consultants were involved in developing the cycling policy.
4. From where are the lessons drawn?	Criteria for selecting acceptable international models include: **geographic and cultural proximity** (Timms 2011), **comparability, performance, and prestige** (Rivera 2004).	Moscow is being compared to other global cities, including New York, London, Paris and Tokyo (Clark&Moonen 2014). Cities mentioned in the documents or during events: London, New York, Berlin, Paris, Amsterdam, Copenhagen, Montreal, Oulu, Helsinki, Hamburg, Milano, Vienna. Geographic & cultural proximity seems to play a lesser role for global cities, but is important for policy dissemination within Russia.
5. What are the different degrees of transfer?	**Copying** - direct and complete transfer; **Emulation** - transfer of the ideas behind the policy or program. **Combination** - a mix of several different policies; **Inspiration** – a policy in another jurisdiction may inspire a policy change, but one where the final outcome does not actually draw upon the original.	Inspiration and emulation were more common than copying. Combination: Urban cycling is implemented in the mix of urban policies that altogether aim to promote new transportation habits and improve public realm (Moscow Urban Forum 2015).
6. What factors constrain policy transfer?	Complexity of policies, past policies, institutional constraints, ideology, culture. Factors influencing transportation policy transfer (Van den Bergh et al. 2007:254):	Cycling policy is relatively simple. Car oriented culture is a challenge, but packaging urban cycling as a measure to improve the city helps.

	- ability to fit in with an existing system or existing infrastructure; - legislation and regulations; - passion and enthusiasm; - media attention; - subsidies/funding for policy implementation.	All Van den Bergh et al.'s factors have facilitated the success of this initial stage in developing Moscow's cycling policy.
7. How is policy transfer demonstrated?	Media, reports, conferences, meetings, visits, statements	Regular reporting at domestic and international urban and cycling events; ongoing media coverage of cycling issues; workshops and events; public polls; mass bike rides and campaigns.
8. How does transfer lead to policy success or failure?	Uniformed, incomplete or inappropriate transfer	Moscow has pre-conditions for success including political will, incorporating cycling into planning and programming, public participation.

Discussion

This review shows that the early stages in the development of the Moscow's urban cycling policy have been successful. Voluntary policy transfer provided decision makers and stakeholders with flexibility in choosing examples from different cities that work best for Moscow. However, cycling policy is a dynamic process (BYPAD n.d.). Acknowledging cyclists as legitimate road users and taking first steps to accommodate them brought to light new challenges. To name a few, the cycling network is still nascent, consequently, most cyclists do not feel safe on roads and continue using sidewalks, public participation in planning and monitoring can be improved.

The importance of Moscow's policy innovations in transportation and urban planning spans beyond local. In centralized federated systems the potential for policy dissemination from the federal center to other jurisdictions is strong (Maggetti & Gilardi 2013). Therefore, the success of cycling policy in Moscow has regional and national significance. Next this research will investigate key stakeholders' perspective on policy transfer for further development of the Moscow cycling policy and the potential for policy dissemination.

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Looking closely at inward FDI in the UK we observe that it has not been equally distributed across regions, thereby, potentially leading to regional disparities which have been substantial and persistent. While there is extensive literature on productivity differences between MNCs and DOMs and their associated spillovers at the aggregate and regional level in the UK there is rather limited evidence that measures the relative impact of MNCs and DOMs on regional growth and convergence in the UK.

This paper investigates the impact of MNC subsidiaries and DOMs on regional growth and convergence in the UK and contributes to the existing literature in a threefold manner: firstly, we employ firm level data on R&D, export, and intangible assets for both MNC subsidiaries and domestic entities in order to investigate the relative impact of these two groups on productivity growth in UK regions. Moreover, our model introduces a convergence interaction term to assess whether activities of MNC subsidiaries relative to DOMs accelerate convergence for laggard regions suggest that the only way to capture the real impact of MNCs and domestic firms on local economies is by using structural firm-level information such as R&D, exports and intangibles (management techniques, organizational know-how, marketing and branding expertise and similar non-durable assets). This is the approach taken in the present paper.

Secondly, the present paper bridges strands of the productivity and international business literature to investigate whether firm specific characteristics of MNC subsidiaries matter for regional productivity convergence. The analytical framework applied in the paper uses relative performance of MNC subsidiaries and DOMs to model the determinants of regional Total Factor Productivity (TFP) growth in the UK over the period 2004-2010. The country context of our empirical exercise is rather crucial given the very limited evidence for the underlying forces of the substantial regional disparities in the UK.

Finally, the third contribution of the paper is to identify effects associated with country of origin of the MNCs. To do so, we disintegrate the sample of MNC subsidiaries into four major investor groups namely, US, EU, Japan and the Rest of the World. We believe that this classification can reveal effects of MNC subsidiaries that are strongly associated with the country of origin. This evidence provides another viewpoint about the impact of MNCs on the local UK economy which in turn can challenge further the effectiveness of policy discussion. Based on this discussion the paper formulates four main testable hypotheses as follows:

H1: The impact of R&D activity of MNC subsidiaries (relative to DOMs) is stronger on regional growth.
H2: The impact of intangible capital of MNC subsidiaries (relative to DOMs) is stronger on regional growth.
H3: The impact of export activity of MNC subsidiaries (relative to DOMs) is stronger on regional growth.
H4: The impact of MNC subsidiaries activities (relative to DOMs) is positive in the convergence process of productivity in laggard regions.
H5: The impact of MNC subsidiaries activities on regional growth varies by country of origin of MNC.

To test these hypotheses the paper employs two different estimation techniques in attempt to address issues associated with heterogeneity and endogeneity bias that is likely to be inherited in the data. The various specifications used in the paper tend to provide similar results, which viewed as evidence that our main findings are driven neither from simultaneity nor from measurement bias. The main pattern of our results is as follows:

Regional convergence is found in process across UK regions. This indicates that the higher the productivity gap between any region and the frontier (in productivity terms), the faster the laggard region tends to grow. Regarding *H1*, the estimate of R&D intensity is positive and statistically significant in most of the specifications reflecting the relative stronger impact of MNC subsidiaries on TFP growth. This result confirms *H1* and complements the existing literature on the relative R&D strength of MNC subsidiaries.

Our positive and statistically significant coefficients for intangible capital *(IK)* suggest that MNCs are important in enhancing regional productivity growth, confirming *H2*. This finding highlights the important role of MNC subsidiaries' organizational and managerial practices on local development.

With regard to our *H3*, results are shown a negative impact although it is statistically insignificant. A potential interpretation of this negative result might be that DOMs develop export profiles which contribute more to regional TFP growth compared to those of MNC subsidiaries as they are linked to wider MNC export grids without being adequately embedded in the regional economy.

Turning to the effect of MNCs subsidiaries on the convergence process, our *H4*, our findings stress that MNC subsidiaries are technologically superior compared to DOMs and this clearly accelerates the speed of convergence for regions that are already falling behind. Nevertheless, our econometric specifications indicate that investment in intangibles from DOMs is more important for regional convergence. This result mainly highlights that the distance of organizational sophistication- as reflected in intangible assets- between DOMs and regional standards is closer and this impacts more effectively on convergence. Our econometric results concerning *H5* show that the origin of the MNC subsidiaries matters both for regional growth and convergence. A key message from testing *H5* is that in the regional context of a developed country, DOMs are likely to be more important components in the puzzle of regional growth. Two explanations are provided for this result: firstly, laggard regions can more easily absorb the organisational expertise of DOMs, which is on average below the standards of the managerial and organisational know-how of MNC subsidiaries. Secondly, the asymmetric effects from the country of origin specifications suggest that MNCs have different development strategies, which are not always compatible to local regions' needs and thus reflect varying degrees of embeddedness.

The empirical findings of our paper pose a series of major challenges for the design and the implementation of regional inward investment policies. In brief, policy makers should put forward plans setting as main goal the further participation and integration of regions in the production networks of MNCs in order for regions to facilitate more effectively gains from global industrial growth. Existing regional policies should then depart from viewing regions as border-*bounded territories* to a *more global –networked geographical entities.*

Table A3: Mean Values of TFP Growth and Distance from the Frontier for UK Regions (NUTS Level 2), 2004-2011

	Region	TFPG	Distance	TFP
UKC1	Tees Valley and Durham	-0.17%	0.60	2.16
UKC2	Northumberland and Tyne and Wear	-6.09%	0.55	2.04
UKD1	Cumbria	4.81%	0.45	1.89
UKD3	Greater Manchester	-15.85%	0.68	2.15
UKD4	Lancashire	6.98%	0.42	1.64
UKD6	Cheshire	6.01%	0.54	1.84
UKD7	Merseyside	-8.01%	0.56	1.98
UKE1	East Yorkshire and Northern Lincolnshire	2.79%	0.39	1.64
UKE2	North Yorkshire	-3.48%	0.56	1.86
UKE3	South Yorkshire	-7.46%	0.57	2.11
UKE4	West Yorkshire	-5.80%	0.50	1.93
UKF1	Derbyshire and Nottinghamshire	0.61%	0.53	2.08
UKF2	Leicestershire, Rutland and Northamptonshire	1.84%	0.45	1.87
UKF3	Lincolnshire	-0.16%	0.52	1.98
UKG1	Hereford, Worcestershire and Warwickshire	-0.08%	0.94	2.37
UKG2	Shrophire and Staffordshire	4.42%	0.38	1.58
UKG3	West Midlands	-9.35%	0.54	2.10
UKH1	East Anglia	5.01%	0.43	1.61
UKH2	Bedfordshire and Hertfordshire	-1.66%	0.77	2.30
UKH3	Essex	3.49%	0.53	1.84
UKI1	Inner London	-3.79%	0.76	2.37
UKI2	Outer London	-3.98%	0.67	1.95
UKJ1	Berkshire, Buckinghamshire and Oxfordshire	2.44%	0.68	2.24
UKJ2	Surrey, East and West Sussex	3.11%	0.57	1.95
UKJ3	Hampshire and Isle of Wight	2.51%	0.49	1.94
UKJ4	Kent	-1.56%	0.74	2.16
UKK1	Gloucestershire, Wiltshire and Bristol/Bath area	4.78%	0.44	1.80
UKK2	Dorset and Somerset	-0.27%	0.56	1.96
UKK3	Cornwall and Isles of Scilly	1.92%	0.48	1.65
UKK4	Devon	-1.21%	0.64	2.04
UKL1	West Wales and The Valleys	2.00%	0.50	1.83
UKL2	East Wales	0.65%	0.56	2.03
UKM2	Eastern Scotland	0.16%	0.75	2.23
UKM3	South Western Scotland	3.18%	0.53	1.96
UKM5	North Eastern Scotland	-2.90%	0.76	2.26
UKM6	Highlands and Islands	7.22%	0.47	1.82
Mean		0.003	0.57	1.98

Table A4: R&D, Exports and Intangibles of MNCs Relative to Domestic Firms for the UK, 2004-2011

Region	R&D	Exports	IK
UKC1	0.86	1.03	19.24
UKC2	0.69	1.13	7.12
UKD1	3.98	0.25	5.53
UKD3	0.77	9.68	22.15
UKD4	0.67	1.54	3.70
UKD6	7.97	12.80	10.15
UKD7	2.86	0.62	39.00
UKE1	0.60	2.70	14.88
UKE2	5.04	8.80	33.97

UKE3	1.39	15.25	59.68
UKE4	3.34	3.56	2.54
UKF1	70.45	0.87	1.27
UKF2	2.57	6.20	256.24
UKF3	2.43	2.75	7.16
UKG1	0.11	1.49	18.90
UKG2	0.24	2.10	1.40
UKG3	0.42	13.23	35.35
UKH1	4.95	3.04	5.73
UKH2	5.18	2.56	3.46
UKH3	13.37	0.93	18.24
UKI1	10.69	0.89	9.01
UKI2	1.27	2.31	26.41
UKJ1	2.04	2.51	7.76
UKJ2	2.23	2.12	14.28
UKJ3	6.50	2.32	4.65
UKJ4	0.94	4.93	5.11
UKK1	0.81	2.54	11.38
UKK2	1.00	1.69	4.19
UKK3	1.79	0.02	5.71
UKK4	1.98	3.49	322.32
UKL1	2.18	1.97	0.67
UKL2	0.37	2.00	17.03
UKM2	5.20	5.33	0.73
UKM3	0.66	1.70	2.60
UKM5	6.04	0.46	9.73
Mean	4.9	3.57	28.78

VENTURE CAPITAL: THE EFFECT OF LOCAL AND GLOBAL CO-INVESTMENT TIES ON FIRM PERFORMANCE

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Firm financing literature has been dominated by a relatively "undersocialized" and "aspatial" view. We approach this gap by applying a social capital and economic geography informed lens to financial transactions. We explore if and how the early growth performance of venture capital [VC] backed organizations varies with the structural and physical location of their investors in syndication networks.

The importance of network ties instead of arm's length transactions between atomistic financial actors is forwarded in a growing number of studies (Granovetter, 1985; Podolny, 2001). Looking at mutual fund portfolio profits, Cohen et al. (2008) find that portfolios where managers share a strong educational bond outperform those investments where no such link exists. Similarly, for mergers and acquisitions, social ties between acquirer and target executives established via a shared educational or employment background reduce the occurrence of strongly deviant returns. In both cases, the interaction between actors leads to the dissemination of information and knowledge reducing information asymmetries. In the VC industry, social networks among actors are prevalent in the form of syndication linkages (the joint investment of two or more venture capitalists in the same financing round of a specific target firm).

Social capital theory suggests that in many networks access to knowledge flows is asymmetrical and largely dependent on the structural network position of an actor (Uzzi, 1996). A vocal assumption in social network theory is that an actor's position in a network is a reflection of its power. In that, a central location in a network facilitates actors to access and to exploit the knowledge and information flows that exist between network partners. On the contrary, a peripheral position impedes and largely deprives actors from benefiting from the capabilities and resources exchanged between network parties. Hence, their structural position affects the ability of an actor to leverage network ties in order to source knowledge and skills. The concept of centrality hereby often gets measured in two contrasting ways: A rather straightforward approach is to regard those actors as most central who maintain the largest number of links to other nodes in the network. Secondly, centrality is associated with an actor's capability to bridge structural holes, meaning the actor's attainment in connecting otherwise detached actors. In addition to the social topography, also the geographical configuration of social networks matters for economic actions. Formal and informal network relations of the entrepreneur in foreign target markets are found to positively impact the likelihood of international expansion and the consequent performance of small firms (Coviello & Munro, 1997).

The aim of this article is to explore if and how structural and spatial patterns of syndication networks are advantageous for portfolio companies in their early growth phase. It is tested whether domestic and international relational linkages are qualitatively different in scope, making it essential to analyze them independently. We argue that especially international relational ties, bridging structural holes, are transmitters of non-redundant information and innovation-triggering knowledge, which strengthen the resource-base of a firm and increase organizational performance. Contrary to the traditional focus on US target companies in the existing literature on venture performance, Belgian portfolio companies are at the center of our analysis. The Belgian VC market is characterized by openness towards foreign investors, while at the same time registering an active domestic VC scene, providing us with the opportunity to observe both domestic and international syndication networks. In addition, given the small size of the country compared to the US, the local and domestic sphere can be regarded as congruent, facilitating the comparison of local/domestic versus international social capital.

Using longitudinal multilevel modeling, we find that early growth trajectories of portfolio firms are impacted by structural as well as geographic co-investment features associated with their respective VC investors. Overall, a higher international integration of domestic VC investors, in form of a larger number of relational ties with foreign investors, impacts the economic performance of a venture positively. A slightly weaker growth enhancing effect is found for local syndication linkages of domestic investors. We propose that the larger effect of international ties on organizational outcome is associated with their properties to serve as sources of novel information, which consequently allow for a better combination of resources, enhancing the competitive advantage of portfolio companies. Whereas knowledge assets stored in the local environment may be taken up via other channels, knowledge and skills acquired through non-local linkages are not gained if it was not for the international 'bridging' relationship. Following, it is suggested that investors that possess external contacts bridging structural holes are particularly beneficial to organizational performance in that they are able to provide unique resources to their portfolio companies. In the light of the positive effects of international as well as domestic network ties, optimally, firms integrate both sorts of relationships in their network. Given the additivity of domestic and international ties, an investor acting under resource constraints adds more to his social capital by establishing an international co-investment relationship if he only possesses local syndication partners than by adding an additional tie to his local network.

Prior studies investigating the spatiality of VC activity generally assert that the co-location of VC firm and target company is favorable with respect to economic effectiveness. While not disputing the relevance of geographical proximity in the VC investment process, we pointed out that from the perspective of the portfolio company also the social network of its investor matters. Here, contrary to what has been found concerning the physical location of investor and target, local but especially more distant, cross-border relational ties act performance enhancing.

Linking structural and spatial network characteristics of VC co-investment networks to the early growth performance of portfolio companies, this article makes several distinct contributions to the entrepreneurship and economic geography literature: Taking into account cross-border syndication ties, our research broadens the geographical scope of earlier analyzes focusing on the structure and performance implications of domestic VC co-investment networks (Sorenson & Stuart, 2001). We detail that not only the social topography of a

network, but also the spatial diversification of relational ties shape financial action. By using longitudinal data on the performance-related parameter employment growth, we also provide unique evidence about the early growth trajectory of start-ups that transcends the focus on survival related performance measures, such as the event of an initial public offering [IPO] or an acquisition, dominating existing studies.

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COMPETITIVENESS STRATEGY ANALYSIS OF WORLD CITIES: THE CASE OF TOP TEN TOURISM DESTINATIONS

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Abstract
Cities compete against each other. The more successful a city is in this competition, most probably the better the life of its residents. Therefore the competitive strategies used in the military, international relations, and business world are starting to be used by urban strategists.

Today one of the most popular areas urban strategists are working in is tourism strategy. The strategy a city employs in order to attract foreign tourists is becoming more important. This is because tourists coming from abroad not only bring money to a city, but also they can become voluntary spokespeople on behalf of the city.

This study analyses the competitiveness strategies of the top ten global tourist destination cities. According to the MasterCard 2014 Global Destination Cities Index: London, Bangkok, Paris, Singapore, Dubai, New York, Istanbul, Kuala Lumpur, Hong Kong, and Seoul were the destinations visited mostly by foreign tourists. In this study, the competitiveness strategies of these cities were analyzed using Porter's generic strategy framework employing secondary data.

As a result of the analysis, selected cities were classified according to their competitiveness strategies. Then, recommendations were made for the decision makers of the cities that are planning to upgrade their competitiveness position.

1. **Introduction and Background**

Cities are competing to attract investments and skilled people. Moreover cities are competing to attract hallmark events such as the Olympic Games and World Football Cup. Another competition area is tourism: there is fierce competition in order get a bigger share of the world tourism market. Decision makers think the better their city's place in the competition, the better it will provide a life for its citizens. The strategic interaction the cities engage in resembles those ubiquitous in the military, international relations, and business world. Hence, they are started to be used by urban strategists.

Studies assume urban competitiveness equal with urban success, which is understood in narrow economic terms, such as economic output, income, and employment growth. However, given its great relevance for public policy formulation, competitiveness should be understood from a longer-term perspective. Such a perspective should acknowledge the close relationship between the economic and noneconomic facets of urban life, highlight balanced development, and serve the overall public interest (Jiang & Shen, 2010).

Harvey (1989) analyses the changing pattern of capitalism and its effects on urban governance caused by a shift from managerialism to urban entrepreneurship. According to Harvey "neoliberal policies advocated the rising competitiveness between cities and regions to attract hyper mobile foreign capital". Acquisition of key control and command functions in finance, government, or information gathering and processing are alternative competitiveness strategies for cities.

According to Porter (1995, 1996), who is one of the pioneer academicians studying city competition, cities do not compete like nation states. He also says places do not compete in the way companies compete, with the same decision making hierarchy and objective of profit maximization. However, they do compete for investment, population, tourism, public funds, and hallmark events such as the Olympic Games. Cities compete by, for example, assembling a skilled and educated labor force, efficient modern infrastructure, a responsive system of local governance, flexible land and property markets, high environmental standards, and a high quality of life. Porter also argues places that are successful economically have concentrations of specialized knowledge, support institutions, rival firms, related enterprises, and sophisticated customers. Proximity leads to special access, closer relationships, better information, and powerful incentives to innovate. Many of the assets of cities are products of cooperation between the public and private sectors, sometimes with third-sector involvement as well.

Lever and Turok (1999) define city competitiveness as "the degree to which cities can produce goods and services which meet the test of wider regional, national and international markets, while simultaneously increasing real incomes, improving the quality of life for citizens and promoting development in a manner which is sustainable". According to Lever (1999) cities compete for several objectives. These are: attracting investments, economic growth, more population, public funds, and attracting hallmark events.

Begg (1999) says, "specialization is inevitable, but in the era of globalization, will require fresh thought on the assets (and liabilities) of different cities. Making effective use of urban assets requires that the differences as well as the complementarities of cities in the urban system be recognized and that there are gains to be achieved from exploiting the characteristics that distinguish cities and give them their identity".

Porter (1985) proposed generic strategies which are (i) overall cost leadership, (ii) differentiation, and (iii) focus. He argued by adeptly pursuing the cost leadership, differentiation, or focus strategies, a competitor could attain significant and enduring competitive advantage over their rivals. Even though there were various critics to Porter's generic strategies, these strategies have been widely accepted and used in the strategy area.

Interest of cities in the tourism industry:
Despite occasional shocks, tourism has shown virtually uninterrupted growth. International tourist arrivals have increased from 25 million globally in 1950, to 278 million in 1980, 527 million in 1995, and 1,133 million in 2014. Likewise, international tourism receipts earned by destinations worldwide have surged from US$ 2 billion in 1950 to US$ 104 billion in 1980, US$ 415 billion in 1995 and US$ 1,245 billion in 2014(UNWTO, 2015). According to UNWTO international tourist arrivals worldwide are expected to increase by 3.3% a year between 2010 and 2030 to reach 1.8 billion by 2030.

One of the major areas cities compete today is the tourism industry. Cities are trying to get more share from this market. By doing this citizens living in tourism destination cities become wealthier; moreover the tourism industry opens new employment areas. Additionally the tourism industry is quite clean compared to most of the other industries. Tourists coming from abroad to a city not only bring money, but also potentially become the voluntary spokespeople on behalf of the city. According to World Travel and Tourism Council research the direct contribution of Travel & Tourism to GDP was US$ 2,364.8bn (3.1% of total GDP) in 2014, and is forecast to rise by 3.7% in 2015, and to rise by 3.9% per annum, from 2015-2025, to US$ 3,593.2bn (3.3% of total GDP) in 2025. In 2014 Travel & Tourism directly supported 105,408,000 jobs (3.6% of total employment). This is expected to rise by 2.0% in 2015 and rise by 2.0% per annum to 130,694,000 jobs (3.9% of total employment) in 2025(WTTC, 2015).

Due to strong growth in the international tourism industry for decades, countries are racing to get more share from the market. Similarly cities are getting more interested in earning from the tourism industry. They are participating in international tourism fairs, constructing new facilities (Disneyland etc.), and developing new strategies in order to attract more tourists. Therefore one of the most popular areas urban strategists are working today is tourism strategies for cities, especially, attracting foreign tourists.

This study will analyze the competition strategies of world-leading tourist cities. How are these cities successful at being popular tourism destinations? Also how are they convincing tourist to spend in their cities. The study analyzes the strategies of successful tourism destinations and finds common points in their strategies. Then makes recommendations for the decision makers who want to make their cities better as a tourist destination.

2. Methodology of the Study

Since the aim of this study is to analyze the competition strategies of world's top tourism destinations we developed a methodology for doing this. While deciding about world's top tourism destinations we have some criteria to select. These are number of people, the amount of total revenue, or revenue per person. These criteria can be increased but these are the most common used criteria in order to measure the success of a tourism destination.

The MasterCard 2014 Global Destination Cities Index is a very useful source in order to gather the data of our selected criteria. This study has been done for the forth time including the top twenty tourism destinations of the world. Due to time restrictions we selected to work on top ten destination cities by using this report. These cities are: London, Bangkok, Paris, Singapore, Dubai, New York, Istanbul, Kuala Lumpur, Hong Kong, and Seoul.

After selecting the cities, the second step was how to analyze these ten cities competition strategies. There are various ways of analyzing a city's competition strategy. We selected the famous generic strategies model of Michael Porter. This model is quite simple and easy to understand. Then we focused on understanding the selected cities competition strategies using Porter's model.

While deciding the competitive strategies of the selected cities we decided to additionally use secondary sources, especially web resources. Also since using primary sources needed some extra budget we preferred to use secondary data for this study. After the examining web sources to understand the selected cities' strategies "Lonely Planet" was selected as the source of data. The Lonely Planet guide is a very useful information source for understanding the strategies of world leading tourism destinations. Especially the web site of Lonely Planet has very useful sections regarding the leading characteristics of these cities. We listed these characteristics in Table xx. Lonely Planet has gone on to become the world's most successful travel publisher, printing over 120 million books in eleven different languages. Along with guidebooks and eBooks to almost every destination on the planet, Lonely Planet also produces a range of gift and reference titles, an award-winning website and magazine, and a range of digital travel products and apps.[1]

3. Analysis of Top Tourism Destinations

Table 1 shows the top ten cities that hosted tourists between 2010 to 2014. London at the top of the list hosted 18.7 million tourists in 2014. Bangkok follows London with 16.42 million tourists. Paris ranks third hosted 15.6 million tourists. Then Singapore, Dubai, New York, Istanbul, Kuala Lumpur, Hong Kong, and Seoul each hosted millions of tourists. Another important result that is derived from the Table 1 is all these cities are hosting increasing number of tourist for the last years. This can be a sign they are successful in their strategies!

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[1] http://www.lonelyplanet.com/about

Table 1: Global Top 10 Destination Cities by International Overnight Visitors (2014)

City	Visitors (millions)				
	2010	**2011**	**2012**	**2013**	**2014**
London	14.71	15.29	15.46	17.3	18.69
Bangkok	10.44	13.8	15.82	18.46	16.42
Paris	13.27	13.88	14.33	15.29	15.57
Singapore	8.8	10.14	11.11	12.1	12.47
Dubai	8.41	9.2	10.16	11.12	11.95
New York	9.43	10.27	10.6	11.08	11.81
Istanbul	6.45	7.51	8.82	9.87	11.6
Kuala Lumpur	8.9	8.99	9.26	9.56	10.81
Hong Kong	8.13	8.43	8.37	8.26	8.84
Seoul	6.06	6.56	7.51	8.24	8.63

Source: MasterCard 2014 Global Destination Cities Index

Table 2 shows the total tourism revenues of the selected ten cities from 2010 to 2014. London is on the top of the list in revenue as well. However, New York follows London closely in the revenue table. Paris is in third place in the revenue ranking. Then comes Singapore, Bangkok, Seoul, Dubai, Istanbul, Hong Kong, and Kuala Lumpur in the list with respect to revenue levels.

Table 2: Total Tourist Spending in billion $

City	2010	2011	2012	2013	2014
London	13.5	15.1	16	17	19.3
New York	14	15.8	14.8	16.4	18.6
Paris	13.1	15.4	14.6	15.8	17
Singapore	9.3	12	12.5	13.3	14.3
Bangkok	7.9	9.4	11.1	15.8	13
Seoul	8.1	9.6	10.3	10.8	11.5
Dubai	7.6	8.1	9	10	10.9
Istanbul	5	5.9	7	8	9.4
Hong Kong	6.1	6.9	7.1	7.6	8.3
Kuala Lumpur	6.4	6.9	7.1	7.3	8.1

Source: MasterCard 2014 Global Destination Cities Index

Table 3 shows the spending per tourist in dollars. According to data New York is the city that gains the most revenue from each tourist in the 2010-2014 period. Seoul comes second in revenue per person and Singapore in third. Paris, London, Hong Kong, Dubai, Istanbul, Bangkok, and Kuala Lumpur follow with respect to revenue per person.

Table 3: Tourist spending per person in $

City	2010	2011	2012	2013	2014
New York	1,485	1,538	1,396	1,480	1,575
Seoul	1,337	1,463	1,372	1,311	1,333
Singapore	1,057	1,183	1,125	1,099	1,147
Paris	987	1,110	1,019	1,033	1,092
London	918	988	1,035	983	1,033
Hong Kong	750	819	848	920	939
Dubai	904	880	886	899	912
Istanbul	775	786	794	811	810
Bangkok	757	681	702	856	792
Kuala Lumpur	719	768	767	764	749

Source: MasterCard 2014 Global Destination Cities Index

As a conclusion from these three tables we can see the number of tourists obviously increases the revenue of the destination, however revenue per person is another variable cities should care about. New York is the sixth rank in number of tourists, however it is second in revenue, this is because New York's revenue per tourist is the highest with $1,575 in 2014.

After the first part of the analysis, strategies of these ten cities were examined. For doing this, the web site of Lonely Planet was the main source of data. Characteristics of strategy were classified in Table 4.

Table 4: Leading strategy items of the cities

City	Food	Shopping	Architecture	Art	History	Other
Bangkok	X					Asian experience
Dubai		X	X			Desert experience
Hong Kong	X	X				
Istanbul	X		X		X	Bridge between east and west
Kuala Lumpur			X			Cyber city
London			X	X	X	Diversity
New York	X		X	X		Night life
Paris	X	X	X	X	X	Cafes
Seoul		X				Design
Singapore	X	X				Botanic garden

All the competing cities were targeting to differentiate themselves. However, most of them were using some common strategies. They were claiming they are good at in the areas of food, shopping, architecture, art, and history. Additionally, these cities attempted to differentiate themselves by creating new products and experiences such as "desert riding", "night life", "botanic garden", etc.

4. Conclusion and Recommendations

Even though successful cities competing in the tourism industry have important competitive advantages coming from their given assets such as history and location, they are investing to differentiate themselves. However most of these top cities provides similar experiences to tourists. Food, shopping, architecture, art, and history are the areas most of these successful cities serve to incoming tourists. Additionally some of these cities create

extra experiences in order to differentiate themselves. However, some of these characteristics special to a city are difficult to replicate. Paris' cafes, Singapore's botanic garden, Istanbul's "bridge between east and west" can be given as examples to enhance differentiation strategies. Therefore we can conclude successful cities provides some common experiences to the incoming tourist, however they also differentiates themselves by giving unique experiences special to their city alone.

Our analysis shows successful cities provide some common basic products to tourists. These are food, shopping, architecture, art, and history related experiences where tourist will spend their time and money. Therefore decision makers who want their cities to be successful in competition should care about how their cities rank in these items. Additionally, a further successful city provides unique experiences to incoming tourists. Decision-makers should also be thinking about these kinds of experiences that will be uniquely attractive to tourists.

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SOCIAL JUSTICE, DEVOLUTION AND THE CITY-REGION: GREATER MANCHESTER AS A NEW SITE OF INNOVATION?

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Introduction

On 3rd November 2014 the Chancellor of the Exchequer, George Osborne, made the first of three significant announcements on changes to the way services are run across Greater Manchester. The devolution package that was on offer, and subsequently agreed, represents an important shift in the political authority of the city-region to exercise greater control over its services. The Greater Manchester Combined Authority (GMCA) and its ten members[1] have sought to engage with the devolution package in its different stages even accepting the condition of a transitional/temporary mayor (June 2015) leading to a directly elected mayor in May 2017. It represents an important experiment outside of London, in city governance in the UK. Scott (1996) and Storper (1997) highlight that city-regions stand out as a point of interest because they seem to be emerging as a key spatial unit in the ongoing restructuring of the global political economy. As political communities and as democratic publics, city-regions are both made up of smaller-scale communities situated in larger-scale communities. In this study we consider how the various scales of political community are democratically related and with a focus on context, we show how the ten authorities have worked on a collaborative city-region basis in the period preceding the devolution decision.

Investigative Framework

We examine here the management of urban renewal policy and practise in the five-year period leading up to and including the announcements from Osborne. Set within a backdrop of recession, austerity and a Conservative led Coalition government, and by using the 2010-2015 period, we can contextualise and examine social justice within a particular paradigm. We draw upon Susan Fainstein's notion of the 'Just City' (2010) and her evaluative criteria of diversity, democracy and equity within global cities as a framework to investigate urban renewal and governance in the city region of Greater Manchester. In The Just City, Susan Fainstein appears to set out "to develop an urban theory of justice and to use it to evaluate existing and potential institutions and programs" (Fainstein, 2010:5) in New York, London, and Amsterdam. She wants to make "justice the first evaluative criterion used in policy making" (Fainstein, 2010:6). By using Fainstein's framework it has been possible to examine the city-region of Greater Manchester, the political regimes and development outcomes. To do this we analyse the different trajectories of different parts of the Greater Manchester city-region. Within the city-region we examine two wards adjacent to each other, although in the different council districts of Manchester and Salford, both are currently subject to programmes of urban renewal. Qualitative data collection for this research is based on a series of semi structured interviews with key representative and elite decision makers who have occupied positions in various organisational layers of the city-region institutions from within the public, private and community/voluntary sectors. This has allowed the research to draw on Fainstein's framework to examine social justice in the context of the globally connected city-region of Greater Manchester.

Social Justice, the city and austerity: initial findings

The initial findings from the research suggest that both Salford and Manchester each focus heavily upon economically driven development. Within this drive there also appears to be differing attitudes between and within the two places in terms of a shared understanding of leadership, cross-sector relationships and co-operative working. These findings have allowed us to critically reflect on the devolution agenda through Fainstein's criteria.

Recession, austerity and a shared understanding of leadership

The Coalition government led by David Cameron came to power in 2010 with a decentralised, localised policy agenda in planning. Indeed, Lowndes and Pratchett (2011) discuss that the Coalition's reforms do show traces of an ideological commitment to localism and a new understanding of local self-government and that there is an ideological agenda which has the potential to deliver a radically different form of local governance. The Coalition government has provided this localised agenda that has been implemented, in part, through the establishment of procedures for neighbourhood planning. However, along with these procedures have come hand in hand cuts to public sector spending that has had massive impacts upon various layers of the city-region. Whilst the Localism Act (2011) was introduced at devolving local powers, and the Coalition thought that perhaps the more power they can decentralise the better, but at the same time they centralised schools and health for example. The Coalition has contained within it certain contradictions with one part Big Society, one part localism, one part centralised control of public sector austerity. Even in the pursuit of city-led growth the Coalition never truly managed to articulate a position that overcame the previous contradictions between Liberal and Conservative, as their different views on what to do with the RDA's demonstrated (see for example Larkin, 2009). Despite devolution being in the pipeline it is serving a particular agenda. This agenda is neoliberal in essence, focused on creating the conditions for growth, rather than being concerned with social justice. On this point regarding responses and solutions to the problems of social and economic inequality Levitas (2012) contends that these ideas are by no means able to respond to the failures of the market and cannot make up for the dismantling of the welfare support and in the call for greater localism the state has to be the final arbiter of equality in terms of social and economic justice. We contend that Manchester can be seen as a key city-region in the Northern Powerhouse, leading a growth corridor, but it experiences severe pressure based on inequality in basic markets, such as housing and health.

Cross sector relationships and co-operative working

Within some of these markets we suggest that cross sector relationships appear to be fragile with no one person or organisation best placed to pull it together. Within the process of devolution there appears to be confusion in terms of coordination and who takes a lead role. The other aspect to this is to question whether the voluntary sector are able to step in as a process of deinstitutionalization takes place, as the state slowly retreats in some communities, but perhaps not all. The city leaders are at the same time, compromised but content to be focused on economic growth in the mistaken belief that they are becoming masters of their own destiny, but that this is at the expense of social needs. It is difficult, and perhaps unfair, to levy any real historic criticism towards the

leaders of Manchester City Council in terms of economic regeneration, although there are gaps in attempts to enhance the social fabric on more local scales. The context of this is about economic growth as opposed to the ideologies of 'social justice' or 'a fairer society.' Devolution is the latest attempt to make cities responsible for their own growth but with less, and the LEP's and the city growth agenda are part of this.

City-region governance

If the Coalition initially, and Osborne now, are serious about devolution then they would likely pay more attention to those such as (Sir Howard) Bernstein and (Sir Richard) Leese who appear to us to be able to understand local need. They therefore seem better equipped to make decisions on the deployment of resources to the benefit of the people in the Greater Manchester city-region. This illustrates the weakness of the devolution agenda currently led by Osborne. On the one hand he seems to lean on the leadership of the city-region to legitimise his agenda, but on the other refuses to commit to a more expansive devolution that would truly empower the politicians and officers across the Greater Manchester combined authority. The fact that eight of the ten borough councils have (for the most part) been Labour-controlled since 1986, has helped maintain an informal co-operation between the districts at a city-region scale for a number of years. There seems to be an effective working balance between the administrative leadership of Bernstein and the political leadership of a city region through Leese and with their counterparts in Westminster. However, this stands in contrast to nearby Liverpool city-region indicating that the relationship between local and national state is not uniform and importantly, could be said to have been embedded in earlier years of Manchester's recent development (post Arndale IRA bombing) where the local governance proved to be capable enough to attract to new public and private investment (Ward, 2003).

Conclusions

We have looked briefly here at the dynamics currently in play in the devolution agenda in Manchester. We are witnessing a phased introduction of new models of governance for the city region and we are able to speculate on the implications of these changes for local leaders across the public and non-statutory sectors. Recession and austerity has remained a context-setting negative, constant across the different scales of governance that we have studied, both in terms of hierarchy and across public and voluntary sectors. The term 'austerity urbanism' has been coined by Peck (2012) as a means of summarising and understanding urban policy in a context of extreme public expenditure cuts and Peck's analysis rings true for what we are seeing in Greater Manchester, simultaneously to decisions on devolution taking place. As Fainstein suggests "there is nothing about regional bodies that automatically makes them vehicles for greater equity than that possible in the individual cities that might make up a fragmented region… [adding that] metropolitan governing institutions potentially can redistribute income, disperse affordable housing, encompass a diverse public, and offer the possibility of popular control of a level of government with greater capacity than small municipalities, but the likelihood that they will produce these results is slim" (Fainstein 2010:85). Indeed, in the context of devolution and the city-region there remain questions about social justice that have been marginalised and for this reason devolution in Manchester has yet to fulfil the ideal – even in a conceptual sense - as a new site of innovation.

Notes

1 – The ten Greater Manchester Combined Authorities (GMCA) constitute, Bolton Metropolitan Borough Council, Bury Metropolitan Borough Council, Manchester City Council, Oldham Metropolitan Borough Council, Rochdale Metropolitan Borough Council, Salford City Council, Tameside Metropolitan Borough Council, Stockport Metropolitan Borough Council, Trafford Metropolitan Borough Council, and Wigan Metropolitan Borough Council.

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THE POPULATION RENAISSANCE OF BRITISH CITIES CONTINUES, BUT FOR HOW MUCH LONGER?

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UK cities have seen a substantial population renaissance in recent years. The early stages of the English dimension of this turnaround were documented in work undertaken a decade ago for the State of the English Cities (SOTEC) report (Champion, 2006), but at that stage the process was seen to be patchy. Also, as much of it was associated with the growth in public sector employment, there have been questions over its long-term sustainability, especially after the post-recession cuts in government spending.

This paper uses the mid-2014 population estimates now available for all four UK countries to examine the latest trends for the 64 cities recognised by the Centre for Cities and defined on the same 'urban area' basis as for Champion (2006). In particular, it examines whether this urban renaissance was able to continue through the years of recession and slow recovery. It breaks down population change since 2001 into its demographic components and uses this framework to assess what can be expected in the future.

Figure 1 shows the substantial scale of the British urban renaissance after the 1990s and indicates that it did indeed survive the 2008-09 recession, using the SOTEC classification of 5 urban-area size classes extended across the rest of the UK. The shift in population growth rate between 1991-2001 and 2001-08 is substantial for all 5 classes, reflecting the national uplift but being above the latter for all the three City sizes but not for the two non-City types. Comparing the second and third columns for each size, it can be seen that this resurgence continued after 2008 for the three City sizes, though the scale of uplift was less than between the first two periods in line with the UK overall. Impressively, the uplift in rate between both pairs of observations was greatest for the Major Cities category.
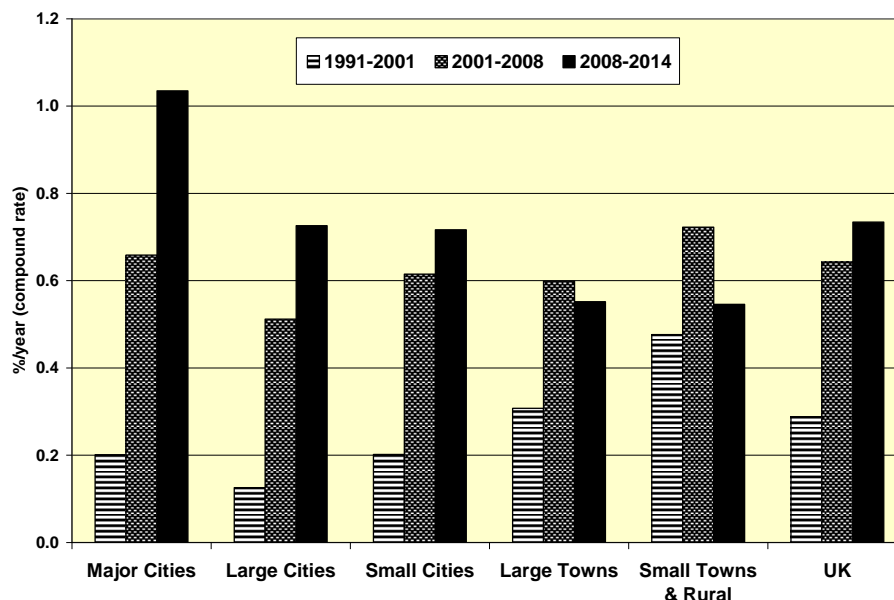

Figure 1. Annual average population change rate, 1991-2014, UK and 5 settlement size groups (calculated from population estimates provided by ONS)

What lies behind the continuation, indeed acceleration, of this urban renaissance through the recession and beyond, especially for the Major Cities? The direct explanation can be found in Table 1 which separates out the natural change and migration components for before and after 2008 and then subdivides the latter into its

international and within-UK elements. The top panel merely provides the data already shown in Figure 1, confirming that the change between the two periods was above the national shift of 0.09 %-points for all three City sizes and indeed fell progressively with size away from the 0.38 %-points of the Major Cities.

Table 1. Rate of population change and its main components, 2001-2008 compared with 2008-2014, UK and 5 settlement size groups, % per annum

Component	Period	UK	Major Cities	Large Cities	Small Cities	Large Towns	Small towns & rural
Total change	2001-2008	0.64	0.66	0.51	0.61	0.60	0.72
	2008-2014	0.73	1.03	0.73	0.72	0.55	0.55
	change	*0.09*	*0.38*	*0.21*	*0.10*	*-0.05*	*-0.18*
Natural increase	2001-2008	0.22	0.48	0.25	0.23	0.12	0.00
	2008-2014	0.37	0.69	0.43	0.40	0.24	0.09
	change	*0.15*	*0.21*	*0.18*	*0.17*	*0.12*	*0.08*
Migration & other	2001-2008	0.42	0.18	0.26	0.38	0.48	0.72
	2008-2014	0.36	0.34	0.30	0.31	0.31	0.46
	change	*-0.06*	*0.17*	*0.04*	*-0.07*	*-0.17*	*-0.26*
International migration	2001-2008	0.39	0.76	0.41	0.36	0.18	0.15
	2008-2014	0.35	0.65	0.41	0.34	0.17	0.13
	change	*-0.04*	*-0.11*	*0.00*	*-0.02*	*-0.01*	*-0.02*
Within-UK migration	2001-2008	0.00	-0.63	-0.19	-0.08	0.31	0.57
	2008-2014	0.00	-0.32	-0.14	-0.07	0.15	0.33
	change	*0.00*	*0.31*	*0.05*	*0.00*	*-0.16*	*-0.23*
Other changes	2001-2008	0.03	0.05	0.04	0.10	-0.01	0.00
	2008-2014	0.01	0.02	0.02	0.05	0.00	0.00
	change	*-0.02*	*-0.04*	*-0.01*	*-0.05*	*0.00*	*0.00*

Source: calculated from data provided by ONS.

The Major Cities column in Table 1 shows that their 0.38 point uplift between the two periods was due to roughly equal uplifts in natural increase and migration. Though not shown here, the former arises from a combination of a rising number of births and falling number of deaths. The migration change breaks down into two opposing trends – a downshift in net immigration from abroad being offset by a much larger upshift in net migration with the UK. ('Other changes' arises primarily from 'unexplained change' calculated from the 2011 Census results and at sub-national level cannot be parcelled out between the two migration components.)

Looking at the other four sizes, the natural component is found to be the main driver of the acceleration of total change rate for the other two City types, indeed with the migration rate slowing for Small Cities and even more so for the two non-City sizes. The next panel down in Table 1 shows that change in their international migration balances played virtually no part in the latter; rather, it was the substantial reduction in internal migration rates, especially for the Small Towns & Rural type where the average annual gain rate fell from 0.57% to 0.33%. Indeed the most dramatic development between before and after the recession – even more than the change in natural increase that particularly favoured City Britain – is the slowing of the traditional 'counterurbanization' pattern of within-UK migration.

This slowing of the urban exodus merits further attention, as it has clearly played a crucial role in recent years. Figure 2 provides the annualized pattern since 2001 for the 5 size classes (with the figure for the whole of the UK being, by definition, zero every year). Clearly the recession year 2008-09 separates the earlier years of stronger net migration loss from Cities to the rest of the UK from the later years of slower counterurbanization. The switch is most strongly evident at the two extremes of the settlement spectrum, though the Large Towns group also saw a marked reduction in its net gain rate then. By contrast, the Large and Small Cities groups

registered only a relatively small change from their earlier pattern of relatively slow net out-migration to the rest of the UK, as already noted from
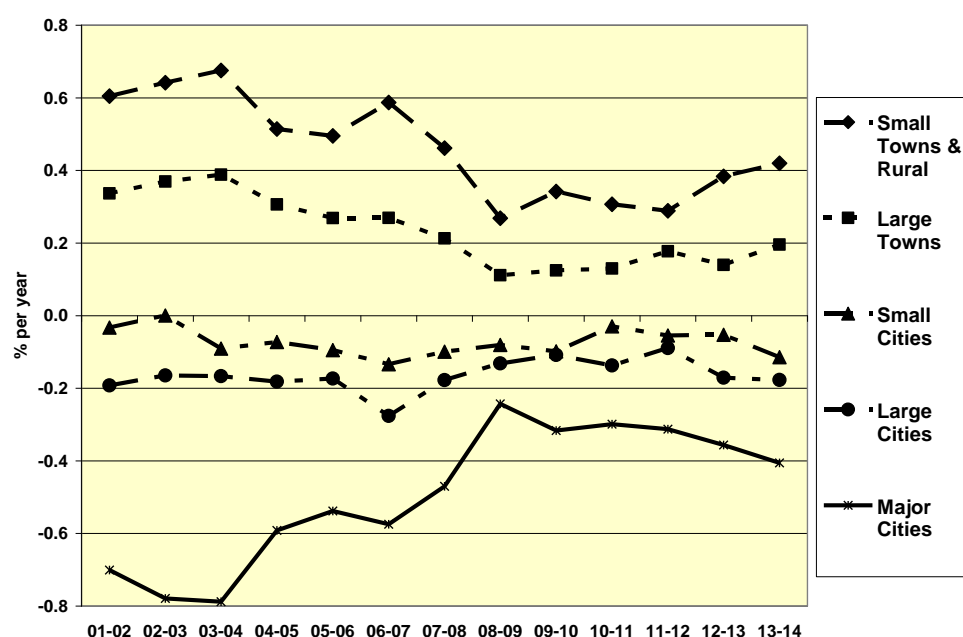
Table 1.

Figure 2. Annual rate of net within-UK migration, 2001-02 to 2013-14, UK, by settlement size group (calculated from data provided by ONS)

Two further features of Figure 2 merit comment and discussion. One is that the narrowing of the range seems to have begun before the onset of official recession in 2008, with the main cutback starting in 2007-08 but with the signs of slowing being evident as early as 2004-05 at the extremes of the range. What could be responsible for this is an important research question. The other feature is that the range begins to expand again after 2009 but only gently compared to the pace of contraction before then. This leads on the question of whether or not this gap will widen further in the future, as indeed it has done after previous recessions like those of 1990-91 and 1980-81 but normally more quickly.

There are two ways of interpreting the slowness of the rebound of the traditional urban exodus after 2009. One approach is to relate it to the initial weakness of the recovery from the latest recession, indeed even slower than after the Great Depression of the 1930s. The other is to suggest that the latest recession has changed the world fundamentally, such that a new regime is emerging for the main drivers of internal migration, notably in labour and housing markets. According to the latter view, there will be no return to the high levels of urban-rural movement experienced in previous growth periods, while the former suggests that there will be but it is just taking longer than usual.

This question is not just of academic interest, but carries important policy implications, not least about the future geography of population growth and its house-building implications. As set out in more detail in Champion (2015a, 2015b), the latest (2012-based) official population and household projections anticipate the continuation of strong growth for British cities, most notably with a further increase of London's population by more than 2.5 million by 2037. But this outcome is predicated on the continuation of the within-UK migration patterns experienced during the recession, as their assumption is linked to the rates averaged over the latest 5 years of data, i.e. for 2007-12. The latest evidence for London suggests that this is unlikely to be the case. By 2013-14, its rate of net out-migration to the rest of the UK had risen to 0.67%, more than double its 2008-09 low point of 0.31% and not far short of its immediate pre-recession level of 0.72%. The planning system would do well to bear this possibility in mind.

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INVESTING IN CITIES: THE CITY MARKET PORTFOLIO

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Introduction
In response to the shortage of financial resources and growing evidence that a certain level of private finance is desirable to accelerate economic growth (OECD, 2014),[2] it is crucial for local governments to demonstrate in a rigorous way how urban investments will deliver effective financial returns to their investors and good economic (environmental and social) returns to their citizens. According to Spelman (2006),[3] in order to maximise financial growth and achieve economic stability, cities should diversify their investments to deliver more balanced portfolio allocations in terms of risk-return performance.

Following this background, the objective in this work is to examine an innovative portfolio optimisation for city asset allocation based on three main allocation factors: financial returns and economic returns generated by the infrastructure itself and the associated level of risk.

Data
In our portfolio examination we identify as a case study the main infrastructure projects developed by a group of US cities with populations larger than 2 million inhabitants, and which hold a substantially dominant position over the metropolitan area[4] in their locations (See Table 1).

For the financial return factors generated by the infrastructure projects, we collect an extensive data of municipal bonds issued by the cities under scrutiny between 2012 and 2015.[5]

Metropolitan area	State	Current-Dollar GDP by Metropolitan Area (m$) 2013	Current-Dollar GDP per capita by Metropolitan Area ($) 2013	Population 2014
Tampa-St. Petersburg-Clearwater	FLORIDA	122,515	40,153	2,915,582
Baltimore–Towson	MARYLAND	168,845	57,294	2,785,874
Denver–Aurora–Broomfield	COLORADO	178,860	61,595	2,754,258
Pittsburgh	PENNSYLVANIA	131,265	52,053	2,355,968
San Antonio–New Braunfels	TEXAS	96,030	39,280	2,328,652
Orlando–Kissimmee–Sanford	FLORIDA	110,443	45,855	2,321,418
Sacramento–Arden–Arcade–Roseville	CALIFORNIA	108,165	45,764	2,244,397
Las Vegas-Paradise	NEVADA	92,991	43,079	2,069,681
Cleveland-Elyria-Mentor	OHIO	122,878	55,430	2,063,598
Indianapolis-Carmel	INDIANA	126,472	60,038	1,971,274

Table 1. US cities and relative metropolitan areas selected for this study.

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[2] OECD (2014). Recommendation of the Councils on effective public investment across levels of government.

[3] Spelman W. (2006). Growth, Stability and the Urban Portfolio. Economic Development quarterly, Vol. 20 No. 4, 299-316.

[4] Metropolitan statistical areas (MSA) are geographical regions centred on one or more large cities that represent the economic core of the area.

[5] Data on municipal bonds are collected from the EMMA database, http://www.emma.msrb.org/. Portions of this data are provided by broker-dealers and banks that underwrite new issues of municipal securities and submit the documents and data to the Municipal Securities Rulemaking Board (MSRB).

The key elements forming our bonds data set are the following: issuer name, security description, dated date, maturity date, interest rate, principal amount, initial offering price and yield to maturity.

For the purposes of our analysis, we consider only revenue bonds connected to an infrastructure project. The main characteristic of revenue bonds corresponds to the principle that the infrastructure project be able to generate a sufficient amount of cash flow to guarantee the repayment of the bond itself. As a matter of fact, the bond-holders remuneration (interest plus principal payments) comes only from the specific earnings generated by the revenue-producing infrastructure. The bond holder is therefore more exposed to credit risk in comparison with a general obligation or sovereign bond, which are also known as credit bonds because of municipality tax support. Accordingly, in order to attract more investors and save money on the cost of borrowing, there has been a general trend for the revenue bond issuer to provide an insurance that guarantees full and timely payment of interest and principal to the bondholder. Nonetheless, not all revenue bonds use this technique, therefore for the aims of our study we need to take into account the differences generated by insured and non-insured bonds.
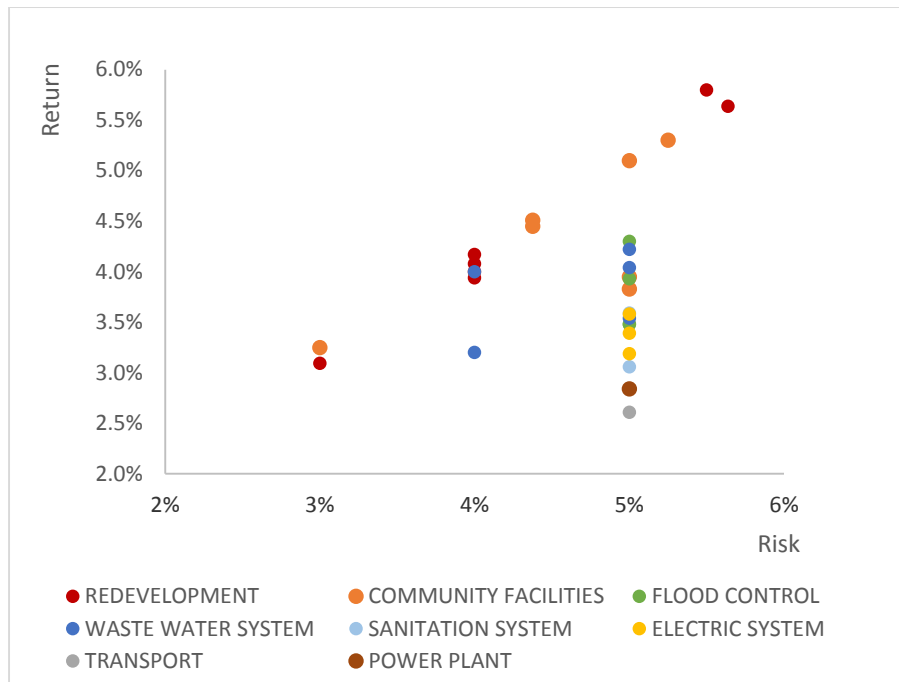
For the economic return factors, we build a weighted index which considers the economic externalities generated by the infrastructure project financed through the municipal bond issue. In doing so, we gather economic and social data at city level such as employment, GDP per capita and level of long-term investments.[6] The result is a synthetic measure which describes the core economic impact generated by the infrastructure development at municipal level.

Methodology and Analysis
Among the elements forming our infrastructure revenue bonds data set, we focus on the yield to maturity and interest rate: we assume that the bond's yield to maturity represents a proxy measure for the project's rate of return, whereas the spread between the bond's interest rate and the interest rate of the Government bond with equivalent maturity, (i.e. risk free rate) is a generic measure of the risk.

For instance, Figure 1 depicts the risk-return profile for the infrastructures developed by the city of Sacramento (California). We emphasise that, at this preliminary stage, only some projects provide a well-defined correlation pattern between risk and return, thus suggesting the common relationship "higher returns correspond to higher risks" and vice versa. Additionally, we observe that among these, the majority are redevelopment projects of city areas and community facility investments such as new real estate, multi-purpose entertainment and sport centres, and industrial parks. However, some projects share the same risk but have different returns, providing the evidence that for this asset class, sometimes for the same level of risk, the performance can differ. Among the latter in particular, we observe utility projects (mainly related to waste, water and electricity management) or environmental enhancements such as measures to counteract flooding issues.

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[6] Economic data used to evaluate the socio-environmental impact of the projects are extrapolated from the city council website, the official statements provided within the bonds issuing, and the web portal: http://www.policymap.com/.

Figure 1. Risk-return profile for different infrastructure projects undertaken through bond financing by the city of Sacramento in California.

Following the pattern unveiled in this first stage of our analysis, we proceed to a deeper investigation of our data set by clustering the infrastructure bonds between insured and non-insured bonds. Figure 2 shows how the two typologies of bonds are located in the risk-return graph for the city of Sacramento in the state of California. The calculation and visualisation of the risk-return components for the bonds, grouped by sectors and typology, is then repeated for all the considered cities. This has the ultimate objective of providing a more accurate mapping of risk-return profiles within the revenue bond market.
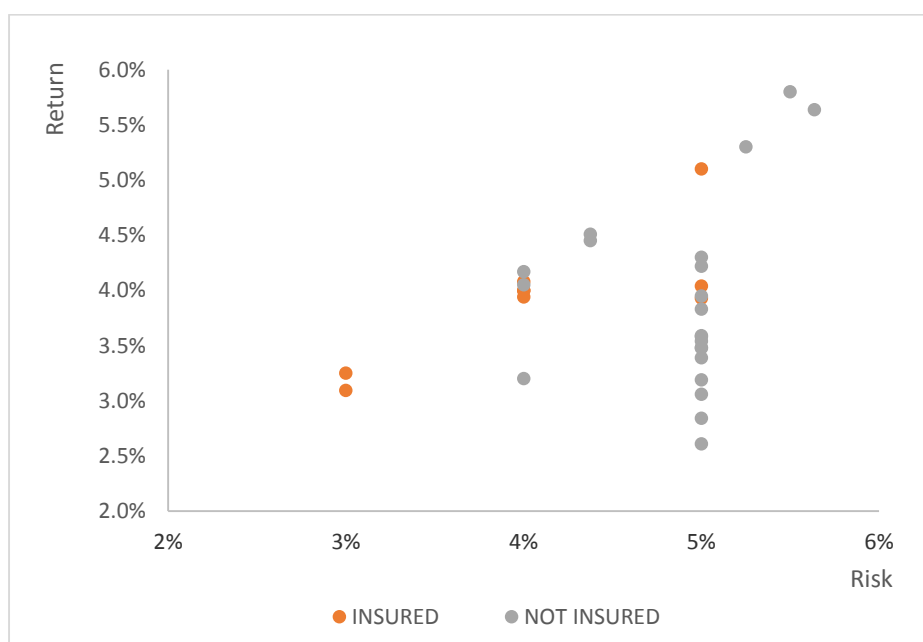
Given this framework, we are then able to generate an optimal City Market Portfolio; this type of asset allocation is the outcome of the multi-factor optimisation derived on financial return, risk profile and economic return. To pursue this objective, we use a two-step optimising algorithm which determines the efficient frontier of city sub-portfolio allocations.

Figure 2. Risk-return profile for different infrastructure projects clustered by typology of bond: insured and non-insured.

In order to perform the two-step optimisation process, we first optimise our portfolio allocations by considering the financial returns and risk only. The sizing and allocations for each local asset class is initially derived from the proportion to its total value in the market (total debt outstanding through bonds of the city). The portfolio allocations are then adjusted and sized according to the risk contributions of each single investment to the total portfolio risk. In doing so, we take into account whether the preliminary analysis has recognised the typology (insured and non-insured bond) and location components as determinant in providing different risk-return combinations within infrastructure projects related to the same sector. The eventual distortions are adjusted and then weighted for the portfolio asset structuring.

As a result of this first step different portfolios are generated for different cities and sectors, thus allowing us to compare and back-test for different specific risk-return distributions.
In step number two, we optimise our portfolio allocations by considering the economic return factors, evaluated as the social-environmental impacts of the infrastructure projects. In this second stage the asset sizing and allocation (adjusted for the risk components) is already included in the economic index evaluated for each project in relation to the city, sector and project location. Hence, the optimisation is computed in order to obtain the best possible investment strategy for local authorities which combines not only the optimal risk-return profile but is also able to provide value to the economic benefits produced for the entire city.

Results and conclusions
Following the two-step optimising algorithm, we estimate, as a result, the efficiency of the City Market Portfolio by assessing its distance from the efficient frontier in terms of financial return or economic return. In this way the optimised portfolio suggests the optimal weights of asset allocations for different financial and economic return profiles across city asset classes.
This approach aims to overcome the main drawbacks associated with externalities in infrastructure investments: the new City Market Portfolio achieves a more sustainable portfolio management through a financial-economic optimisation which integrates the financial risk-return assessment with the socio-environmental impacts evaluation. The outcome of our research provides a new concept of financing infrastructure that potentially benefits the public and the private sector, both of which are always in search of innovative instruments to drive their investment decisions.

ANCHORING THE NORTHERN POWERHOUSE: UNDERSTANDING ANCHOR INSTITUTIONS AND THEIR CONTRIBUTION WITHIN A COMPLEX URBAN AND REGIONAL SYSTEM

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Abstract
The Northern Powerhouse vision (Osborne 2014), to create thrivin Northern city-regions with a re-balancing of the English economy (Martin et al 2014, pp. 3-6) is by necessity a long-term ambition (Osborne 2014).

City-regional sustainable development is a complex system (Martin and Simmie 2008; Martin & Sunley 2015; RSA 2014, p15) and will rely on local leadership for policies and decision making in a devolved environment (Cox and Hunter 2015, pp. 11-12). Experience from Anchor Institutions in the United States highlights new models of place-based leadership (Dubb et al 2013, p vii; Serang, Thompson and Howard 2013, p14-17) shared value (Porter 2010; ICIC 2011; Porter and Kramer 2011), investment (Serang, Thompson and Howard 2013, pp. 4-6) and community wealth building (Dubb et al 2013, pp. 24-29) for delivering city-regional development.

New forms of multi-level governance institutions, such as Combined Authorities (Sandford 2015) and Local Enterprise Partnerships (HM Government 2010 pp. 12-14) will be significant in this shaping of place and economies (Cox and Hunter 2015, p 17). This paper provides an early analysis of the role and contribution of Anchor Institutions in the Northern Powerhouse geography. These institutions have the potential in a devolved administration (House of Lords and House of Commons 2015) to make a major contribution to the sustainable

development of the Northern Powerhouse and to address the economic, social and environmental factors that contribute to the sustainability of places in the long term.

Understanding the Northern Powerhouse Challenge

Recent devolution in England (House of Lords and House of Commons 2015), the creation of a 'Northern Powerhouse (Osborne 2014a; 2014b) and associated fiscal, investment and public service devolution (HM Treasury and GMCA 2014; GMCA 2015) has set in place new levers, responsibilities, governance models, policies and political powers for stimulating economic, social and regional development.

The case for the Northern Powerhouse vision is a feature of a growing imbalance in economic and social outcomes (Centre for Cities 2015) that have evolved from long-run factors (Parkinson 2013a; Cox 2013 p 81; Martin 2015, p240-243). The Northern Powerhouse cities have lower levels of national GDP output and productivity (Martin, Tyler and Gardiner 2014, pp 64 - 65) and higher levels of social inequality and deprivation (Parkinson et al 2013, p 24). Historical, political and economic history and path dependency play an important role in shaping the performance of place in economic, social and environmental terms. As Martin (2015, p245) highlights, 'economic efficiency and social equity arguments' are not mutually exclusive but 'complementary and mutually beneficial' for the rationale of 'greater spatial balance' (Martin, 2015, p 245).

Whilst quality of life for many in England has improved (Social Mobility & Child Poverty Commission 2014, p7), the challenge remains the same for the Northern Powerhouse, for spatial re-balancing (Martin 2015, p 241; 265), sustainable development ideals (United Nations 2010) and greater social justice (CLES 2015, p17).

The Northern Powerhouse landscape is shaped by historical settlement patterns (Brenner 1998, p6), physical geography, industrial heritage and political power. As Osborne (2014a; 2014b) and others have highlighted the geography is by its nature imprecise (Wharton J. cited in Pidd 2015) and will have 'fuzzy boundaries' (Harrison 2012, p1248).

As Brenner (1998) contends these are 'multiple overlapping forms of territorial organization' which 'converge, coalesce and interpenetrate' (Brenner, 1998, p 6). Brenner argues that these forms of territorial organisational can apply to cities/urban areas as well as states at different geographical scales e.g. urban, regional, national and global (Brenner 1998, p16).

Whether seen as an 'interconnected metro-region' (Cox and Hunter 2015, p 4) or a collection of distinctive northern cities developed on either side of the natural Pennines geography and historical Lancashire/Yorkshire divide there are variances in how this territory is defined. The Northern Powerhouse has a population of ten million people, (Centre for Cities 2015 p2) the Sheffield, North East, Greater Manchester, Liverpool, West Yorkshire and Hull city-regions (Centre for Cities 2015 p5) and 23 Universities (Centre for Cities 2015 p7).

Economic and social development of the Northern Powerhouse is a factor of long run complex evolutionary systems (Martin and Simmie 2008; Martin & Sunley 2015 pp725-728; RSA 2014, p15). Relative GDP performance of UK regions 1985-2012 appears to have changed little with the northern powerhouse regional territories (North East England, Yorkshire and the Humber, North West England) ranked lower than London, the South East, and the Midlands (ONS 1996, 2014 c in Jones 2015, pp. 285-286).   If the Northern Powerhouse Region is considered as a collection of the North West, North East and Yorkshire and Humber geography, functional economies, and communities, the scale is larger than London.   The economy is delivering a higher proportion of GVA and a larger number of jobs (see Table1).

The challenge for sustainability and resilience of this complex economic and social urban and regional system, is to foster a whole system approach (Jones, 2015, p288), and partnership working at different scales and across multi stakeholders, political parties and communities (What Works Centre 2015 p7). The Northern Powerhouse is situated within interconnected international, national and local economies operating at overlapping and different scales (Jones 2015, p 286).

Northern Powerhouse Regional Analysis

Region	NUTS1 regions (ONS December 2014)			UK Business Count 2015 (NOMIS 2015)									(NOMIS)		
	Population 2014	Total GVA Total GVA (£m)2	GVA per head (£)2	Enterprise Micro	%	Enterprise Small 10-49	%	Enterprise Medium 50-249	%	Enterprise Large 250+	%	Enterprises Total 2015	Population working age 16-64 2014	Jobs 2013	Job Density 2013
North West	7133000	141620	19937	207195	87.8	23765	10.1	4085	1.7	910	0.4	235955	4509800	3,476,000	0.77
North East	2618700	43937.4	17381	57050	86.8	7105	10.8	1290	2	285	0.4	65735	1663400	1,133,000	0.68
Yorkshire & Humber	5360000	101701	19053	150585	87.4	17870	10.4	3100	1.8	660	0.4	172215	3389600	2525000	0.74
Northern Powerhouse	15111700	682695	56371	414830	87.5	48740	10.3	8475	1.8	1855	0.4	473905	9562800	7,134,000	0.75
NP as % of London	176.98	201.70	140.17	103.52		137.30		125		98.15		106.52	16421	13302	80.22
London	8538700	338475	40215	400710	90.1	35500	8	6780	1.5	1890	0.4	444880	5823500	5363000	0.93

Table 1: Northern Powerhouse Analysis by NOMIS and ONS regions (NUTS1)

This will require new policy levers and investment to deliver and will rely on local systems leadership and new mayoral governance models for policies and decision-making in a devolved environment (Cox and Hunter 2015, pp. 11-12). Importantly, there is an increasing focus on the significance of 'institutions and the state' for regional resilience and growth (Martin and Sunley 2015, p 725; Boschma 2015, pp. 741-742). Jones (2015) suggests that "*embedding capital*" is as important as "*creating it*" (Jones 2015, p289) and argues that greater attention should be placed on how UK regions "*ensure the benefits of their resources…are harnessed to the benefit of the region itself*" (Jones 2015, p 289). Criticism of present devolution approaches suggest that the focus is primarily on fuelling economic growth not addressing inequality or redistribution (Deas 2015, p2311). This interplay of institutions and place is considered central to the success of the Northern Powerhouse.

The Role of Anchor Institutions within a complex urban and regional system
Institutions (Tomaney 2014, p132) and Anchor Institutions (Clarke and Williams 2014) play a significant role in the development and success of city-regions (Martin and Sunley 2015) due to their embeddedness in and interdependence with place (Maurasse 2007, p2; Clarke and Williams 2014). Anchor institutions, institutional thickness (Amin and Thrift 1995) and institutional effectiveness (Beer and Lester 2015, p 223) are central to city-regional development and sustainable economic growth in that they "condition, constrain and enable" economic evolution and are shaped by it. As such, "institutions are both context and consequence of economic evolution', (Martin and Sunley 2015, p724).

Maximising these Anchor Institutional assets and the mutual benefits for development of place, people and institutions are considered vital lessons from the United States (CLES 2015, p2). These Anchor Institutions in the US and UK typically include Universities, arts, cultural and community organisations, and health providers along with anchor coordinators such as city-regional decision makers and major public service, infrastructure or utility providers (Table 2). Community or Social Anchors are increasingly considered important whether by virtue of their role in co-ordination (Anchor Co-ordinators) or delivery of a range of essential community or voluntary services within a locality. This 'social sector…is integral' to support people holistically in a locality to connect to skills, welfare or economic opportunities and for quality of life (CLES 2015a, p17; RSA 2015, pp48-67).

Table 2: Anchor Institutions in the US and UK literature

Anchor Institution Type	Anchor Type by Reference	References
University - Higher Education Institutions	1, 3, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 17, 18, 19 (15 sources)	1. McInroy N. and Jackson M.; and Paul Hackett (ed) (2015) pp 1-19.
College – Further Education Institutions	3, 5, 6, 7, 9, 10, 12, 17, 19 (9 sources)	2. Netter Centre for Community Partnerships (2008) '
Utility Provider (infrastructure services water, energy, transport)	3, 10, 14, 15, 17, 19 (6 sources)	3. The Work Foundation (2010) 'pp 1-28.
Arts, Cultural, Community Organisations, libraries, religious/churches	3, 6, 8, 9, 12, 13, 14, 15, 17, 19 (10 sources)	4. McInroy, N. and Longlands, S. (2011) 5. Gold and Devids (2014) 6. D Maurrasse (2007)
Sports Organisation, Venues, Teams	3, 8, 13, 14, 15, 19 (6 sources)	7. Hahn A. with Coonerty C. and Peaslee L. (2003)
Housing Association	1, 5 (2 sources)	8. Inner City Insights (2011) pp 1-10.
Hospitals, Medical Centres, NHS Trust	1, 5, 8, 9, 12, 13, 14, 15, 17, 19 (10 sources)	9. McClure C. R, Mandel L. H., Saunders J., Alemanne M. D., Spears L. I. and Bishop B. W. (2012) pp 1-83.
Private Sector Business (Can be large corporates with strong local links such as banks (UKES); those with Headquarters in place; longevity in place)	1,3,5, 12, 14, 15, 19 (7 sources)	10. Dubb S. and Howard T. (2012), 11. Stasch J. (2014) 12. Penn Institute for Urban Research (nd)
Military Installations	12, 15, 19 (3 sources)	13. Birch E. L. (2014) 'Chapter 11, at page 2017 in Watcher S.M. and Zeuli K. A. (Eds) (2014)
Law Enforcement Agencies	9 (1 source)	14. Ehlenz M. M. and Birch E. L. with Agness B. (2014), pp 1-50, at p1.
Schools and local education agencies	9 (1 source)	15. Smallbone D., Kitching J., Blackburn R. (2015), p vii.
Local and Regional Government Agencies	1, 3, 5, 9,19 (5 sources)	16. Taylor H. L. Jr. and Luter G. (2013)
		17. Fulbright-Anderson K., Auspos P. and Anderson A.(2001) 'p1.
		18. Witty A.(2013) 'BIS, 13/1241
		19. Mosavi S. (2015)

The central premise is that Anchor Institutions have an important presence or role in the shaping of places in which they are located. They often have a large stake in these places that in turn have an important influence on their operation. Frequently these anchor institutions display longevity of location in the place and have a significant influence and impact on place through the jobs they generate (as employer and indirectly), procurement practices and purchasers in locality, their investments in physical assets and their substantial human and intellectual capital. These Anchor Institutions provide a range of functions within a place that form part of the place's attraction for business and economic growth, for migration and settlement of people and for sustaining the functioning and operation of the place over time. Anchor Institutions are therefore institutions with influence and impact in the wider functional economy and settlement that have a strong connection and mutual dependency (embeddedness and co-evolution) with the places in which they are located.

The changing governance arrangements of English city-regions with Combined Authorities, (Sandford 2015) Local Enterprise Partnerships (HM Government 2010 pp. 12-14) and further devolution deals under consideration (e.g. North East deal 23 October 2015) lead to a growing significance of economic, social and environmental

development of place.

These new forms of multi-level governance institutions will be central to the shaping of place and economies (Cox and Hunter 2015, p 17) for "The key [to growth] appears to be how assets are used, how different stakeholders interact and how synergies are exploited in different types of regions", (OECD 2009, p7).

Anchor Institutions in Northern Powerhouse city-regions affords a rich talent pool, strong public, private and community organisations and substantial employment, expenditure and procurement capacity vital for future growth. Analysis of typical Anchor Types (Higher Education Institutions, Medical/Health and Fire/Police Federations highlights a total of 275 Anchor Institutions with a combined spend of £76,087M. These Anchor Institutions are major employers in the region accounting for 1,133, 371 jobs, some 15% of all employee jobs in this geography (as defined by a sub set of 75 Local Authorities).

This has particular import for major city-regions such as Leeds City Region, Liverpool City Region, Greater Manchester and the North East in supporting development of the Northern Powerhouse economy (CLES 2015b) and national prosperity.

Table 3: Northern Powerhouse Analysis by Anchor Institution Type								
Anchor Type	No. Anchors	Spend £M	Notes	Anchor Institution Jobs	Students HESA 2013/14	Population (75 Local Authority Areas) NOMIS 2014	Local Employee Jobs Head count NOMIS 2014	AI jobs as % of total employee jobs
Local Authorities	75	14124.60	1a-c	527,876				
Higher Education Institutions	32	6161.88	2	103,395	520,685			
Fire and Rescue	11	571.33	3	12853				
Police and Crime Commissioner	12	3018.95	4	54277				
NHS	145	52210.73	5	434,970				
NP TOTAL	275	76087.49		1,133,371	520685	17,292,503	7,325,300	15.47
NOTES								
1a. Spend: 2014-15 £M Revenue Spending power tables 2014/15 in 2015/16 Supporting Information Final 9								
1b. Jobs: Employment 2014-15 Total Headcount QPSES 2014 Q1								
1c. Population, local employee jobs, Local Authority NOMIS data 2014								
2. HESA Staffing 13/14; HESA Institution HE students 2013/14								
3. DCLG Fire Statistics 2013-14 p 5; National Statistics release data by Local Authority; Employment Appendix 1-13, 31 March 2014								
4. Police and Crime Commissioner 31 March 2014; Guardian police staff FTE 2014								
5. NHS Workforce at 30 Sept 2014 health and social care information centre ccg financial allocations 2013/14; health providers Dec 2014 NHS role count								

In the United States, Anchor Institutions have been mobilised and integrated into city-regional development processes. Multi stakeholder collaboration by public service or not for profit institutions such as Universities, Colleges, hospitals, housing associations, libraries and sporting/cultural venues is supporting the creation of institutional and place-based (shared) economic, social and environmental value (Porter 2010; Porter 2011, pp 64; 66; ICIC 2011, p3; Taylor and Luter 2013, p1; Dubb, McKinley and Howard 2013a and 2013b; CLES 2015a, p3).

There is a growing recognition that Anchor Institutions merit greater prominence in decisions and policy (CLES 2015a; 2015b). Experience from Anchor Institutions in the United States highlights new models of place-based leadership (Dubb et al 2013, p vii; Serang, Thompson and Howard 2013, p14-17), partnerships (CLES 2015a, p15) shared value (Porter 2010; ICIC 2011; Porter and Kramer 2011), investment (Serang Thompson and Howard 2013, pp. 4-6) and community wealth building (Dubb et al 2013, pp. 24-29) for delivering city-regional development.

Influenced by these US experiences, new forms of collaboration, public service innovation, community anchor strategies and anchor institution developments are emerging in the Northern Powerhouse region to realise economic and social development objectives in the context of continuing reductions in public services funding (see Table 4).

Private sector institutions sometimes display similar characteristics to Anchor Institutions, with significant potential to contribute to economic and social development of places (Netter 2008; Community Wealth Organisation 2015; McInroy et al 2015; Penn Institute for Urban Research nd; Smallbone, Kitching and Blackburn 2015). Utility companies, financial institutions and some 'embedded' major employers in cities or regions have been identified as having this potential and significance in their wider engagement through their assets, employment base and supply chain (The Work Foundation 2010, p1). This strategic role of large private sector businesses as major employers or headquarters in city-regions and their role and influence as magnets for investment and in the growth of supply chains or networks of small and medium sized enterprises, contributes to the development of place. CLES (2015a) argues for businesses to act more like 'citizens in which they are based' to support better utilisation of the institutional assets for economic development and to address inequality' (CLES 2015a, pp 15-16).

Table 4: Innovation in engagement of Anchor Institutions

Location	Innovation Type	Anchors Engaged	References
Leeds City Region	Good Growth and Procurement to address poverty	Higher Education Further Education NHS Trusts Clinical Commissioning Groups Housing Associations Transport Provider	Joseph Rowntree Funded Research 2015
Preston	Anchor Procurement	Good growth fostered by local Procurement	CLES (2015b)
Wakefield District Council and Calderdale County Council	Community Anchor Strategy	Development of strategies to utilise community anchors for social development	Wakefield District Council and Calderdale County Council
Greater Manchester	Health Service Innovation	Health service integration through innovation and partnership	GMCA 2015

Conclusions

This early analysis of the Northern Powerhouse region has focused on Anchor Institutions and their significant contribution and scale. A greater focus on institutions and integrated place-based and people–based policy will be important in realising the full potential of the Northern Powerhouse. Understanding and actively developing the vital role of anchor institutions as components, nodes or networks within this urban and regional system will support a more aligned and sustainable vision of place-based regional economic, social and environmental development to be realised. The ongoing public sector funding reductions will have a major impact on some Anchor Institutions and the necessity for public service transformation and reform. It is important to understand how these public services can be maintained utilising the assets of Anchor Institutions of all types, including community and private sector institutions. These Anchors contribute substantially to the fundamental

requirements of place and sustainable communities which is important for future economic growth over the long run.

Place-based policy and practice of these Anchor Institutions have the potential to support a Northern Powerhouse that is not only prosperous, efficient and productive but that delivers a distinctive approach to shared sustainable economic, social and environmental value to re-balance quality of life for all. The risks and consequences otherwise are stark (RSA 2014, p 10; United Nations 2010).

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FIXED TERM CONTRACTS AND EMPLOYERS' HUMAN CAPITAL: THE ROLE OF EDUCATIONAL SPILLOVERS

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1. Introduction

While the current debate almost exclusively focuses on the regulatory framework as the determinant for the spread of fixed term employment, this paper aims at considering if further factors affect it. In particular we consider if the individual employer's profile plays any role in this regard.

Indeed, the employers' human capital is recognized as a key factor behind the firms' personnel policies and, then, their use of flexible staff arrangements (Lazear, 2010; Doms et al., 2010; Van der Sulis et al., 2008; European Commission, 2006).

A high level of education is expected to translate into modern management practices that point out the competitive advantages deriving from training, firm-specific skill accumulation and technological adoptions that, themselves, tend to favour long-term employment relationships at workplace (Bloom & Van Reenen, 2009).

Education is also expected to favour attitudes toward cooperative behaviour, trust and fairness in the workplace. These behavioural features potentially represent a sort of enforcement mechanism design that reduce the employers' incentive to hire on a temporary basis because of incomplete information about workers' efforts and productive ability (Fehr et al., 2009; Bandiera et al., 2006; Fehr & Gachter, 2000).

Moreover, following the literature that points out the possible knowledge spillovers arising from agglomeration of educated people (Agrawal et al. 2008; Henderson, 2007), we also consider how the agglomeration of highly educated employers may exert an external effect on the choices of other employers located in the same area concerning the use of temporary contracts. In this analysis, we test if a larger share of employers holding a university degree in a specific environment lowers the incidence of temporary employment in every firm located in the same environment, regardless of the education of the employer in that firm. In doing so we focus on a very peculiar endowment of human capital, entrepreneurs' schooling, as the possible source of a local externality and add new insights to the literature on educational spillovers. In fact, in this field of research the education of the entrepreneurs appears to be as relevant a factor as much as it is disregarded.

The paper aims at filling this gap in the literature by using a unique dataset that collects information on a representative sample of Italian firms operating in both the manufacturing and the service sectors.

The empirical analysis shows that the presence of a higher educated employer reduces significantly the total share of fixed term workers in the firm, also taking into account a rich set of information about workplace practices, firms' characteristics and employment composition. Furthermore, we find that the agglomeration of

highly educated employers produces a local spillover effect which significantly reduces the incidence of fixed term jobs in other firms in the same area.

2. Background discussion and hypotheses

In line with the literature pointing out the relevance of knowledge spillovers arising in local areas from agglomeration of educated people (Duranton & Puga, 2003; Rosenthal & Strange, 2004), we test whether the entrepreneurial choices on the use of fixed term contracts can be influenced by experiences and strategies of other employers in the same area. More precisely, we hypothesize that where the share of employers holding a university degree is larger, the incidence of temporary employment tends to be lower. Thus we shed light on the possibly relevant externality of education originating from entrepreneurs. In the existing literature, firms resort to temporary contracts as the outcome of an optimal choice following profit maximization in a given institutional/legislative framework. In our framework we add the hypothesis that also socially-built preferences matter and the choice of temporary contracts may be influenced by the interactions among employers.

Both knowledge and attitudes are partially shaped by social interactions. Thus, apart from the primary role of incentives and constraints dictated by nationwide labour institutions, the choice between fixed-term and permanent contracts can be regarded as a discretionary choice whose outcome is affected on a local scale by the aggregate knowledge of the overall local decision-makers.

To this regard, the most natural and relevant channel for spillover is given by contacts and exchanges among employers and the learning descending from such interactions. Both formal and informal contacts and relationships may give rise to an exchange of information and opinions as well as allowing for peer imitation (Acs et al., 2009; Audretsch & Keilbach, 2007).

As far as small and medium enterprises are concerned, informal networks connecting employers in local areas can be regarded as a primary source of knowledge, a 'place' where a common view can grow up and diffuse.

3. Data and descriptive statistics

The empirical analysis is based on Employer and Employee Surveys (RIL, Rilevazione Longitudinale su Imprese e Lavoro) conducted by ISFOL in 2010 on a nationally representative sample of partnership and limited companies operating in the non-agricultural private sector. Our sample consists of 24,459 firms distributed on 110 Italian Provinces.

4. Econometric strategy

The econometric analysis is performed by estimating the following equation:

$$(1)\ FT_i = \alpha \cdot GE_i + \beta \cdot GEshare_{ps} + \delta \cdot W_i + \chi \cdot F_i + \varepsilon_i$$

where the dependent variable FT_i is the share of fixed term contracts, calculated on the total number of employees in firm i, GE_i is a dummy variable indicating whether the employer is graduated, while $GEshare_{ps}$ is a density indicator, namely it is the share of employers with a tertiary level of education in the province p and sector s in which firm i is located, and represents the possible source of the entrepreneurial human capital spillover. The vector W_i describes the composition of the firm workforce, F_i is a vector containing other firm and workplace characteristics and ε_i is an idiosyncratic error term.

The estimation strategy starts by performing a simple linear OLS regression model of different specifications of equation (1). In addition, a non linear Tobit model is used to account for the double censored nature of the dependent variable (FT_i), being the fraction of workers with a fixed-term contract lying between zero and one by construction (Wooldrige, 2010; Angrist & Pischke, 2009).

However, a potential problem with the linear and Tobit estimates is the presence of unobserved heterogeneity and endogeneity related to the non-random agglomeration of highly educated employers. To control for potential omitted variables bias we then include in equation (1) a large set of agglomeration and firm level variables that are expected to influence the diffusion of temporary contracts beyond the local concentration of educated employers.

Moreover, an instrumental variable approach is adopted to deal with reverse causality concerns related to the non-random localization of highly educated employers. Thus, as additional instrument (Z) for the variable GEshare, we used the share of individuals with a tertiary level of schooling over the total population at provincial level, obtained by Census data in 1981.

5. Estimation results
5.1 Explorative results
The OLS and Tobit estimates of equation (1), without IV, are displayed in Table 2. In our findings the presence of an employer with a tertiary education degree (GE) significantly decreases the share of temporary workers. Moreover, the agglomeration of graduate employers at province/sector level (GEshare) significantly reduces the share of fixed term contracts used by firms operating in the same economic environment.

5.2. Instrumental variable estimates
Even with an IV approach, the role of individual employer's schooling (GE) confirms its importance in explaining the propensity to hire temporary employees. Moreover, IV estimates confirm that the agglomeration of highly educated employers (GEshare) exerts a negative effect on the incidence of fixed term employment. GEshare is negative and highly significant, demonstrating that an agglomeration of highly educated employers affects the individual decision to offer temporary contracts.

5.3. Robustness checks: the role of firm size
All our results have been subjected to a robustness check, considering separately firms with less than 15 employees and those with 15 employees or more.

In Table 4 we present OLS and Tobit estimates with and without IV for small firms. The results confirm that the individual level of education of the employer (GE), as well as the agglomeration of employers' with tertiary education (GEshare), both exert a negative and significant impact on the share of fixed term contracts in firms with less than 15 employees. Similarly, Table 5 shows that both higher education of employers and agglomeration of highly educated employers are driving forces in reducing the intensive use of temporary contracts in firms with 15 employees or more.

6. Concluding remarks
This paper shows that the agglomeration of graduate employers significantly reduces firms' use of fixed term contracts in a large sample of Italian firms. This result is robust to the use of different estimation strategies in order to deal with endogeneity concerns derived from the agglomeration effect, as well as to the cross section dependence problems affecting standard errors. To the best of our knowledge, this paper is the first one to shed light on this issue.

DESIGNING SCOTLAND'S NEW FISCAL FRAMEWORK: PRINCIPLES, RISKS AND CHALLENGES

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The UK has traditionally been one of the more fiscally centralised countries in the OECD. Although the three devolved parliaments (in Scotland, Wales and Northern Ireland) have had substantial spending autonomy, tax devolution has been limited to control over relatively small property taxes.

Tax devolution is in the vanguard of UK fiscal policy. Following the Scottish independence referendum in September 2014, commitment has been made to expand the Scottish Parliament's fiscal powers, including the devolution of substantial new powers over taxation – most notably over income tax – combined with some additional welfare spending powers, especially in relation to disability benefits. The UK government also plans to partially devolve income tax to the Welsh Assembly if the Welsh people approve such powers in a referendum and has agreed to devolve Corporation Tax to the Northern Ireland Assembly, if ongoing political and budgetary issues in Northern Ireland are resolved. Within England, the Government has announced the devolution of NDR

to local authorities, including limited ability to vary rates; and some city-regions are to gain greater autonomy for determining local spending priorities.

Although the circumstances are very different, in all cases the motivation for fiscal devolution is to enhance the fiscal autonomy of sub-national government (SNG), by providing SNGs with incentives to pursue policies which grow the economy, enabling SNGs to retain the proceeds of growth, and providing fiscal policy 'levers' enabling SNGs more power to vary their budgets at the margin. The hope is that accountability will also be improved through making SNGs responsible for funding a larger part of their budget, and through changing both government-citizen and inter-governmental relationships.

Inevitably however, the decentralisation of fiscal autonomy exposes SNGs to a higher level of budgetary risk. Whilst fiscal decentralisation may enhance autonomy and growth incentives, it may expose SNGs to greater fluctuations in annual budgets; more pertinently, it may result in growing disparities between SNGs that are due to circumstances beyond the direct influence of the SNG itself.

The design of grant allocation mechanisms is critical in ensuring that the balance between the risk and reward (or equity and incentive) elements of fiscal dentralisation is struck appropriately. But how should this balance be struck to ensure that the potential benefits of greater policy autonomy and fiscal reward for effective policy delivery reflect the increased budgetary risks? This paper considers these questions with specific reference to the proposals for fiscal devolution to the Scottish Parliament.

Following the 'no' vote at the independence referendum , the Smith Commission was established to work with the five parties represented in the Scottish Parliament to agree which fiscal powers should be devolved. The proposals included full devolution of income tax, assignment of half of VAT revenues, and devolution of some smaller taxes on the revenue side; combined with devolution of a number of welfare benefits, the value of which is around £2.5bn. Implementation of the Smith proposals will result in the Scottish Parliament's total own-source revenues increasing to 48%.

The Smith Commission also made a commitment to retain the Barnett Formula, the formula which has been used to determine the Scottish Parliament's budget since its establishment in 1999, and which is generally accepted to provide the Scottish Parliament with a relatively generous settlement. But Scotland's Barnett-determined block grant will clearly need to be adjusted to reflect both the new tax-raising powers and new expenditure responsibilities being devolved. In the first year that new powers are devolved, this adjustment should be relatively straightforward, at least in principle. The initial reduction in the block grant for devolved taxes should be equivalent to the revenue forgone by the UK Government; likewise the devolution of welfare spending powers will need to be accompanied by an addition to the block grant equivalent to the forecast level of spending in Scotland by the UK government in that year had the powers not been devolved. The size of this adjustment will be substantial. For income tax alone, its initial value will be around £11 billion - equivalent to one third of the Scottish government's budget.

In future years however the reduction to the block grant (the block grant adjustment, BGA) has to be indexed to account for the UK Government revenue forgone in future years. If the BGA was not indexed, but fixed at the year 1 amount, then, in the likely face of inflation and economic growth its value would be eroded over time. Likewise, the addition to Scotland's block grant to account for devolved welfare powers will need to be indexed to account for spending growth in the future. The Smith Commission stated that the block grant should be 'indexed appropriately', but stopped short of saying how this indexation should be made.

The paper investigates the properties and implications of a number of indexation methods in detail. Although these indexation methods all protect the Scottish budget from risks that equally affect the whole of the UK economy, they differ in the extent to which they protect the Scottish budget from the risks of differential change in population growth and other demographic risks.

These different indexation methods can have quite different affects on the Scottish budget over time, depending on what drives differential tax base growth. Different indexation methods imply different judgements about how to distribute risk and reward for differences in economic and demographic performance between rUK and Scotland. Different indexation methods also have different implications for the Scottish budget of changes in UK tax rates for taxes that have been devolved to Scotland (given the interdependence between UK tax revenues and Scotland's Barnett Formula determined block grant).

Determining which indexation method is the most appropriate is problematic for two reasons.

First, the Smith Commission established a number of principles for the operation of Scotland's new fiscal framework, seemingly without fully considering how such principles could be operationalised, nor the interactions between the different principles and the wider devolved finance architecture. We find that the different principles can sometimes be in conflict. For instance, it is not possible to design a system of block grant adjustments that simultaneously fully satisfies both of the "No Detriment" principles: that neither Scotland nor the UK should lose financially simply as a result of devolution; and neither should either government lose out from the actions of the other once devolution is in place. . In part such conflicts arise because of the desire to retain the Barnett Formula, which, although viewed as sacrosanct by most Scottish politicians, has no real objective basis and contains a number of quirks and idiosyncrasies which mean it sits ill with the (somewhat) more principles-based approach being taken to adjusting the fiscal framework to account for tax and welfare devolution. But they also arise because the Smith Commission principles include elements that are suggestive of notions of equalisation and solidarity, and simultaneously elements that give primacy to more competitive forms of fiscal federalism, and the trade-offs between the two do not seem to have been fully recognised.
Second, the UK has no formal constitution which sets out which sort of budgetary risks should be pooled and which should be the responsibility of one or other government (and nor is it possible to infer from existing arrangements how various risks should be pooled or separated). The Smith Commission principles state that the UK government should bear the risk of shocks and secular trends that affect the whole of the UK. And it says that the Scottish Government should bear the "full economic responsibility" for its fiscal and economic policy decisions. But it does not say who should bear the risk of shocks or secular trends that affect Scotland only, or affect Scotland differently to the rest of the UK. Distinguishing between the impact of policy decisions and shocks or trends differentially affecting Scotland in practise would be fraught with difficulty, of course. But consideration of issues of the appropriate degree of risk-sharing and insurance in a fiscal union cannot be avoided.

To date, discussions around the block grant indexation mechanism have taken place between the UK and Scottish Governments, but there has been no wider political or parliamentary debate. Yet these discussions are crucially important, not only for Scotland's future fiscal framework, but also the determination of devolved budgets in the UK's other devolved governments and evolving city-regions. This paper helps fill that gap, and provides a qualitative and quantitative assessment of the various options for the BGAs against the Smith Commission principles, and broader principles and issues in sub-national finance (such as equalisation, risk-sharing, incentive provision etc).

SPATIAL ASPECTS OF INEQUALITY AND POVERTY AMONG CASUALISM AND CAUSALITY

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Economic disparities, both between individuals and between groups within a country or between countries, are an old phenomenon related to the concept of equal opportunities. It appears questionable, also, that they have a value exclusively negative. If, on the one hand, there are those who impute to the disparities a causal efficacy in producing social injustice and immobility, on the other, many support the idea that inequality is an incentive to increase one's own capacities and opportunities.

Economic inequality, meaning composite difference between individual income and consumption, is traditionally attributed to a number of causes related to work, the individual qualities, education, race, gender or culture, as well as the social and family contexts of origin. For these reasons, there is an inverse relationship between inequality and social cohesion and, thus, social capital, as Putman had highlighted in his work (Putman, 2004).

Despite the undoubted progress that involved most of the countries in terms of growth of the values of human development, of economic growth and poverty reduction, income inequalities detectable through social indicators show that these are increasing in many countries. The calculations made by the UNDP in 2012 show that almost a quarter of the value of the HDI has been lost in the inequality (UNDP, 2013).

Between 1990 and 2005, the decomposition of the IHDI clearly shows that for 66 countries, global inequality has declined only marginally, because the progress in terms of equality in health and education were offset by the increase in income inequality. In fact, the IHDI takes into account not only the average achievements of a country (health, education, income), but also how those achievements are distributed among its population. Under perfect equality, the IHDI is equal to the HDI, but falls below the HDI when inequality rises. The difference between the IHDI and HDI represents the human development cost of inequality, also termed "the loss to human development due to inequality". The IHDI allows a direct link to inequalities in dimensions, it can inform policies towards inequality reduction, and leads to better understanding of inequalities across population and their contribution to the overall human development cost.

The Human Development Report 2014 also introduced the Coefficient of human inequality, a new measure of inequality in HDI, calculated as an average inequality across three dimensions (UNDP, 2014).

The problem of relative poverty and inequality is proving to be less a problem between nations, but it is instead a problem in the nations. With concern, in the Report you can see that the developed countries are greatly slowing the growth of the Index of Human Development, and they see growing income inequality. For example, in Africa, from 1990 to 2012, 13 countries have seen growing inequality, and 19 countries have seen decreasing; in America 4 countries have seen it grow and 14 countries have seen it decrease; in Europe, USA, Japan and Oceania 30 countries have seen increasing and 8 countries have seen decreasing.

In most developed countries - those in the group "very high human development" - therefore you can see from the available data (Fig.1; Fig.2; Fig.3):

1) A set of States in which the loss of development due to inequality is minimal and therefore not influential, or the least influential in rank (Norway, Australia, Denmark, Belgium, Greece, Portugal and Latvia have the same rank, for example)
2) States in which the correction for inequality causes a significant increase in rank (Finland, Slovenia, Czech Rep. and Slovakia take 9 positions, for example)
3) States in which the correction for inequality results in a significant reduction in rank (for example, USA with -23 and Republic of Korea with -20).

Fig. 1

Inequality-adjusted Human Development Index: dimensions and indicators.
Very High Human Development Countries

HDI rank	Human Development Index (HDI) Value 2013	Inequality-adjusted HDI (IHDI) Value 2013	Inequality-adjusted HDI (IHDI) Overall loss (%) 2013	Inequality-adjusted HDI (IHDI) Difference from HDI rank 2013	Coefficient of human inequality 2013	Inequality in life expectancy (%) 2013	Inequality-adjusted life expectancy index Value 2013	Inequality in education (%) 2013	Inequality-adjusted education index Value 2013	Inequality in income (%) 2013	Inequality-adjusted income index Value 2013	Income inequality Quintile ratio 2003–2012	Income inequality Palma ratio 2003–2012	Income inequality Gini coefficient 2003–2012
VERY HIGH HUMAN DEVELOPMENT														
1 Norway	0.944	0.891	5.6	0	5.5	3.4	0.914	2.4	0.888	10.7	0.871	..	..	25.8
2 Australia	0.933	0.860	7.8	0	7.5	4.2	0.921	1.8	0.910	16.6	0.760	..	..	..
3 Switzerland	0.917	0.847	7.7	-1	7.6	3.9	0.926	5.8	0.795	13.2	0.824	..	..	33.7
4 Netherlands	0.915	0.854	6.7	1	6.6	3.9	0.902	4.1	0.857	11.8	0.806	5.1	..	30.9
5 United States	0.914	0.755	17.4	-23	16.2	6.2	0.851	6.7	0.830	35.6	0.609	..	..	40.8
6 Germany	0.911	0.846	7.1	1	7.0	3.7	0.900	2.4	0.863	14.8	0.781	..	..	28.3
7 New Zealand	0.910	..	..	..	..	4.8	0.895	..	..	..	..	..	..	..
8 Canada	0.902	0.833	7.6	-2	7.5	4.6	0.902	4.0	0.816	13.9	0.785	..	..	32.6
9 Singapore	0.901	..	..	..	..	2.8	0.932	..	..	..	..	..	..	..
10 Denmark	0.900	0.838	6.9	0	6.8	4.0	0.877	3.1	0.846	13.3	0.754	..	..	..
11 Ireland	0.899	0.832	7.5	-1	7.4	3.7	0.899	5.2	0.841	13.3	0.761	..	..	34.3
12 Sweden	0.898	0.840	6.5	3	6.4	3.1	0.922	3.6	0.800	12.4	0.803	..	..	25.0
13 Iceland	0.895	0.843	5.7	5	5.6	2.8	0.928	2.5	0.826	11.6	0.783	..	..	..
14 United Kingdom	0.892	0.812	8.9	-4	8.6	4.5	0.890	2.6	0.838	18.8	0.719	7.2	..	36.0
15 Hong Kong, China (SAR)	0.891	..	..	..	..	2.8	0.948	..	..	..	..	..	..	..
15 Korea (Republic of)	0.891	0.736	17.4	-20	16.8	3.9	0.910	28.1	0.622	18.4	0.704	..	..	..
17 Japan	0.890	0.779	12.4	-6	12.2	3.2	0.947	19.8	0.648	13.5	0.772	..	..	..
18 Liechtenstein	0.889	..	..	..	..	..	..	..	..	..	..	..	..	..
19 Israel	0.888	0.793	10.7	-4	10.4	3.8	0.915	7.9	0.786	19.6	0.693	..	..	39.2
20 France	0.884	0.804	9.0	-2	8.9	4.0	0.913	8.6	0.745	14.2	0.765	..	..	..
21 Austria	0.881	0.818	7.2	4	7.1	3.7	0.906	3.7	0.765	13.8	0.789	..	..	29.2
21 Belgium	0.881	0.806	8.5	0	8.5	3.9	0.895	9.2	0.738	12.3	0.792	..	..	33.0
21 Luxembourg	0.881	0.814	7.6	3	7.5	3.3	0.901	6.0	0.716	13.1	0.837	..	..	30.8
24 Finland	0.879	0.830	5.5	9	5.5	3.5	0.899	2.1	0.798	10.8	0.798	..	..	26.9
25 Slovenia	0.874	0.824	5.8	9	5.7	3.8	0.882	2.7	0.840	10.6	0.755	4.8	..	31.2
26 Italy	0.872	0.768	11.9	-1	11.6	3.4	0.927	11.7	0.697	19.8	0.701	..	..	36.0
27 Spain	0.869	0.775	10.9	1	10.5	3.9	0.918	5.4	0.751	22.1	0.673	..	..	34.7
28 Czech Republic	0.861	0.813	5.6	9	5.5	3.7	0.855	1.4	0.854	11.3	0.737	..	..	..
29 Greece	0.853	0.762	10.6	0	10.5	4.0	0.898	11.3	0.707	16.2	0.697	..	..	34.3
30 Brunei Darussalam	0.852	..	..	..	..	4.4	0.861	..	..	..	..	..	..	..
31 Qatar	0.851	..	..	..	..	6.0	0.844	..	..	..	..	13.3	..	41.1
32 Cyprus	0.845	0.752	11.0	-3	10.9	3.7	0.887	14.0	0.668	14.9	0.719	..	..	..
33 Estonia	0.840	0.767	8.7	3	8.5	5.6	0.791	2.5	0.837	17.4	0.681	6.4	..	36.0
34 Saudi Arabia	0.836	..	..	..	..	8.7	0.779	..	..	..	..	..	..	..
35 Lithuania	0.834	0.746	10.6	-3	10.4	6.6	0.749	6.1	0.823	18.6	0.673	6.7	1.6	37.6
35 Poland	0.834	0.751	9.9	-2	9.7	5.7	0.818	5.6	0.779	17.9	0.666	5.2	1.3	32.7
37 Andorra	0.830	..	..	..	..	..	..	..	..	..	..	..	..	..
37 Slovakia	0.830	0.778	6.3	9	6.2	5.6	0.805	1.5	0.790	11.5	0.740	3.6	0.9	26.0
39 Malta	0.829	0.760	8.3	5	8.2	4.8	0.875	5.7	0.691	14.1	0.727	..	..	..
40 United Arab Emirates	0.827	..	..	..	..	5.5	0.826	..	..	..	..	..	..	..
41 Chile	0.822	0.661	19.6	-16	18.5	5.9	0.868	13.7	0.644	36.0	0.516	13.5	3.5	52.1
41 Portugal	0.822	0.739	10.1	0	9.8	3.9	0.886	5.7	0.686	19.9	0.664	..	..	..
43 Hungary	0.818	0.757	7.4	7	7.3	5.4	0.795	3.5	0.777	13.1	0.703	4.8	1.2	31.2
44 Bahrain	0.815	..	..	..	..	6.3	0.816	..	..	..	..	..	..	..
44 Cuba	0.815	..	..	..	..	5.1	0.865	11.0	0.661	..	..	..	..	..
46 Kuwait	0.814	..	..	..	..	7.2	0.775	..	..	..	..	..	..	..
47 Croatia	0.812	0.721	11.2	-2	11.1	5.2	0.832	10.4	0.690	17.6	0.653	5.2	1.4	33.7
48 Latvia	0.810	0.725	10.6	0	10.3	7.6	0.741	3.6	0.784	19.8	0.654	6.0	1.4	34.8
49 Argentina	0.808	0.680	15.8	-4	15.3	9.3	0.786	8.6	0.716	28.1	0.560	11.3	2.4	44.5

Fig. 2

Inequality-adjusted HDI.
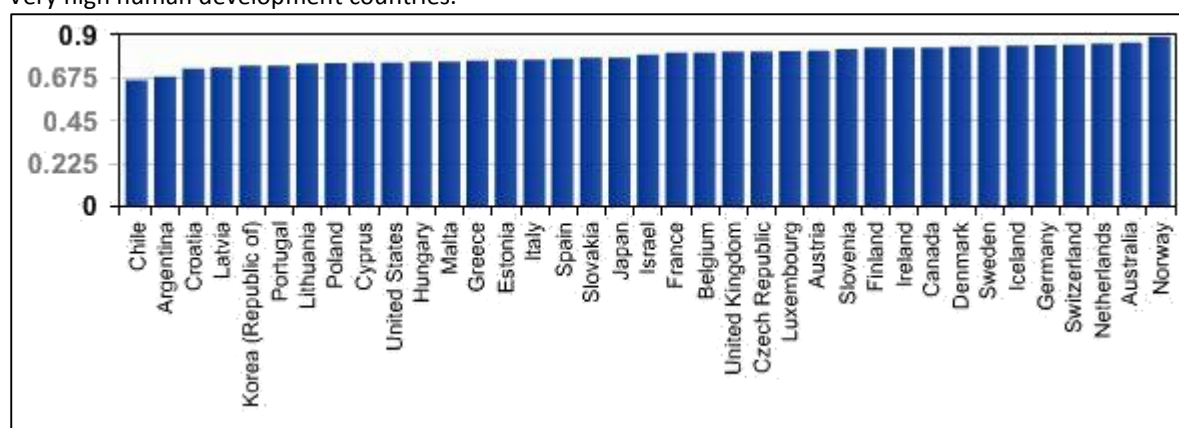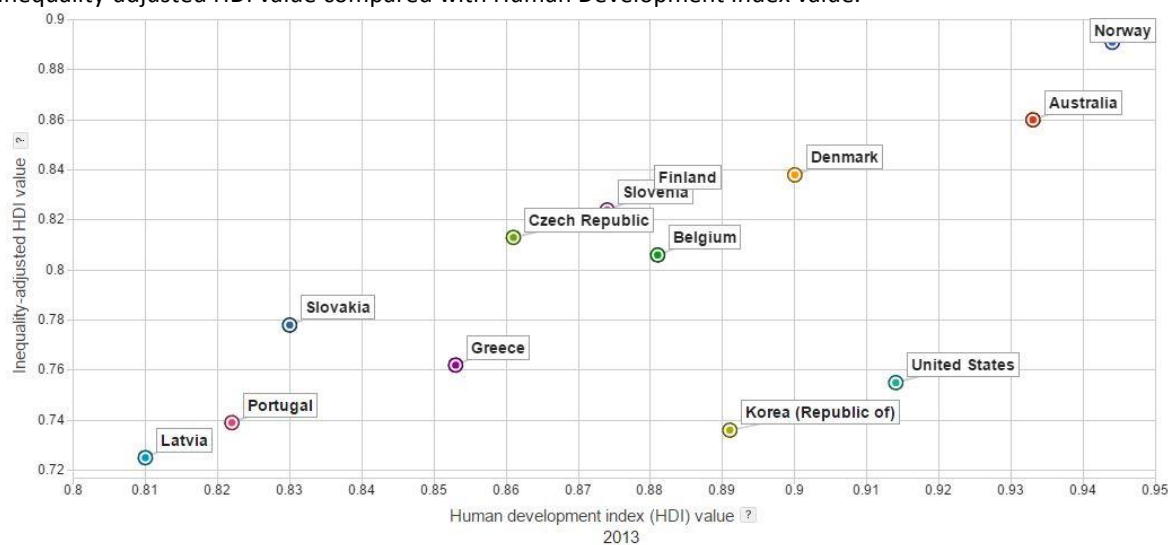Very high human development countries.

Fig. 3
Inequality-adjusted HDI value compared with Human Development Index value.

These analyzes, compared with spatial data available, highlight how geography represents the unavoidable foundation of any development discourse.

To make research even more probative, comparative analysis is made within the countries of the North where inequalities are more attenuated both than most poor countries both in intra-regional. In the countries included in the evaluation, also used data show an inverse correlation between the level of public confidence and inequality in income distribution.

A preliminary point, however, it is essential: the only tool available to assess the social cohesion and the quality of social relations, is the use of data provided by surveys on the degree of confidence of the population. The surveys are carried out on a regional scale by the European Value Survey, General Social Survey, while at international level by the World Value Survey on the degree of confidence of the population. The same correlation was found, for example, between inequality and female condition.

In Europe where the indices of inequality have lower values, such as the Scandinavian countries and the Netherlands, they are found higher levels of trust that come to 66% of the population in Sweden, while in countries with greater inequality, the percentages gradually subside until to achieve a minimum of 10% in Portugal; likewise data concerning different US states show that confidence is all the smaller the greater the economic inequality (Wilkinson, Pickett, 2009). The analyzes carried out have a significant impact not only to evaluate directions and development objectives within the different geographical areas, but also to evaluate the relationship between the level of public confidence and the willingness to intervene on behalf of the people of the South.

Comparing OECD data between percentages of national income allocated to foreign aid and the degree of confidence, you can indeed see a greater propensity to the generosity of the Scandinavian countries and the Netherlands, than in other countries, such as Portugal, which allocate a percentage much lower.

The aim of the paper is to highlight how the relationship between poverty and inequality is very evident if not even expanding. Analyzing the effects of inequality, it is possible to highlight the existence of an inverse relationship between this and social capital as cohesion and, therefore, in relation to the network of relationships in which a person is inserted that allow him to more effectively achieve common goals through collective action, as Putman has revealed (Putnam 1997; Putman 2004). In addition, there are economic and social experiments, as "the ultimatum game", that go far beyond, with evidence in the results as a preference for equality is even detectable; they put highlights the reluctance towards injustice and inequality (Skyrms, 1994).

These studies are corroborated by the analysis, much more convincing for the "skeptics", based on brain scans that confirm, unequivocally, as cooperation, reciprocity and inclusion cause a sense of gratification and, conversely, exclusion and lack of appreciation cause a pain similar to the physical (Rilling et al 2002; Eisenberg, Lieberman 2004).

The proposed approach, polarized on capabilities and freedom, fits within the debate between equality and poverty, which are two sides of the same coin.

CONNECTING REGIONAL DEVELOPMENT THEORIES: AN ADAPTIVE NETWORK FRAMEWORK FOR CAPITAL FUNCTIONS, SPATIAL ANALYSIS, AND MULTI-SCALE URBAN DESIGN

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Connecting Regional Development Theories

Theories of complex adaptive systems and evolving economic dynamics of regional development have been introduced and refined in recent years. Such theories have explored how economies *emerge* or *coevolve* from bottom-up processes. These theories also specifically relate to the role of information, knowledge, technology, innovation, etc., and associated social relations for contemporary economic performance in advanced regional economies:

- Evolutionary Economic Geography   (e.g., Simmie & Martin 2011)
- Geography of Innovation   (e.g., Feldman 2014)
- Distributive Regionalism   (e.g., Christopherson & Clark 2007)

However, many economic geography regional theories and metrics communicate regional patterns of change according to statistical distributions and comparisons to other regions, not internal spatial distributions among communities within each region. This means that certain kinds of policy or infrastructural improvements are indicated, but not how or where to embed capital functions and access structurally into local social, cultural, or business norms and locations to enhance entrepreneurship, productivity, and specialization enhancements. In other words, and understanding of the regional economies system interaction dynamics is insufficient without knowing regional structural information as well.

Currently, these regional theoretical contributions have not yet been sufficiently integrated with urban design and planning theories of local community development. The literature points out that in case studies that locally generated (endogenous) asset developments which are not copied or lured from elsewhere are typically more durable and successful than transplanted assets. To plan and design appropriate local-to-regional development on the ground, the co-evolving relationships between people, places, technology and local, regional, and global markets cannot be assumed away when making actual investments or creating development plans.

Capital Functions

In an effort to sort out the regional implications of innovation economic assets, the traditional conceptions of financial capital's relationship to production have changed. This is particularly true of physical capital infrastructure, which in an industrial context looks to transportation, factories, and "smoke-stack" metrics of success that focused on moving physical materials and products, not information signals and human contacts.

With the contemporary emphasis on technology, innovation, and research development functions of a region, additional capital concepts have evolved:

Financial   Physical

Human

Social   Cultural   Network Creative

Knowledge

These concepts refer to patterns of value, capacities, and access to resources and/or relationships useful for economic performance, as well as investments in the enhancement of these capacities.

Spatial Analysis
Additional research into complexity theory has also influenced theories of development with an emphasis on spatial factors.

The fractal or 'science of cities' studies (Batty 2013) indicated that city infrastructure across the globe reveal a *universal scaling factor* which make regions with larger populations consistently more productive of both positive (wage) and harmful (crime, pollution) outputs at consistent rates (Bettencourt 2013).

Additionally, Space Syntax theorizes both *conservative* (housing on private spaces and streets) and *generative* (economic and public spaces and streets) development functions to specific areas within regions based on the likely routes people travel to get to various places within a commuting region (Hillier 2012).

Connecting Regional Development
Better integration of existing and emerging theory is needed to facilitate research that can link regional spatial infrastructure, the forms and functions of local capital, and innovation for regional development.

For example, for U.S. regions experiencing employment, wage, and business losses in maturing (factor and efficiency) or mobile industries, enhancing innovative business activity is a common policy goal. However innovation is not easily planned or commercialized. The specific details of capital, spatial, and operational deployment and compensation are primary concerns, but regional development theory has insufficiently integrated these conceptual tools for such urban design and planning applications.

Multi-Scale Urban Design
How forms of capital are formed, exchanged, and transformed requires a clearer understanding of how these dynamics collectively operate through regional social and business networks.

Effectively this means that better theoretical frameworks of how networks are formed and transformed are needed. Recent studies of urban social network generation and adaptation indicate some important principles for regional development and local urban design of commercial sites:

Accessibility:
The density of active social ties between city residents is a function of ease of access to the flow of information (Pan et al. 2013).

Proximity:
"The probability of a social link between two individuals is proportional to their geographic distance squared" (Levy and Goldenberg 2014).

Activity:
The activity of people towards specific goals drives the evolution of examined social systems and differences in user connectivity or node degree, as new links are added towards achieving a desired outcome (Muchnik et al. 2013).

Searchability:
"social networks tend to self-organize in the very special and unique way that makes the network searchable" (Levy and Goldenberg 2014).

These four indicators provide important units of analysis to discern the potential for enhancing local network functional health within each Space Syntax "generative site." Such sites have the best proximity and, potentially, high social accessibility and activity to support self-organized searches for needed capital ties for ongoing urban

transformation. Using assessment tools to develop individual diagnostics at each site--as well as to compare sites across a region, holds promise for more systematized multi-scalar development planning regionally with individual urban commercial or mixed use site designs.

Adaptive Network Framework
Adaptive cycles and globalization mean local contexts may be subject to ongoing economic transformations at multiple scales, simultaneously. How is anyone, particularly the people, governments, and institutions in the business of guiding local and regional development to know where to start, connect, or improve development in a region?

Multi-level spatial development goals suggest a better integrated local-to-regional development framework has to accomplish three priority goals. It has to be able to *prioritize placemaking* at specific locations in a region. It has to *synchronize capital* activities so that investment and development work to improve coordination systematically, by balancing connections and flows in time and space so that the costs, benefits, and risks of investments are deployed appropriately for ongoing human and business development performance. Finally, the information for these decisions has to be gathered, stored, sorted, distributed, and utilized for ongoing development decisions at various scales in some form of *network selection* both accessible and searchable for innovation-seeking individuals, firms, and communities throughout a region.

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SOCIAL AND SPATIAL INEQUALITY BETWEEN HAIFA'S NEIGHBORHOODS AND ITS IMPACT ON LIFE-CHANCES

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Introduction
The present study examines the relationship between the allocation of goods and the distribution of capital assets over space, and the opportunities this allocation and distribution create for both the individual and the household. The neighborhood is examined as the living environment that links the physical space, the community and the network connections and opportunities that characterize it. On a larger scale, the neighborhood unit creates the latitude for civil activities, economic opportunities and the positioning of the individual's status and social role (Kearns & Parkinson, 2001).

The theory on forms of capital developed by leading thinkers in the social sphere and the area of planning (Friedmann, 2002; Bourdieu, 2001) serves the present study as a basis for estimating the level of resources and their distribution across residential neighborhoods. This approach extends the debate that usually focuses on purely economic capital to other forms of capital, whose accumulation and then transfer to future generations may have a great impact on well-being, in both the spatial and the private sphere. At the spatial level, capital forms are the main resources used to create sustainability and the city's productive ability, thereby affecting its inhabitants' life opportunities.

An individual's life-chances, created from birth, depend on the circumstances and life events that are beyond one's control, but they have a direct impact on the quality of life. The community in which the individual grew up (e.g., neighborhood) and the status of the person's parents, as well as the social structure and policy and political forces, have decisive influences on the individual's circumstances and choices (Blacksher, 2002).

Amartya Sen (1992) defined two concepts in this context: Capabilities and Functionings. According to his approach, capabilities will be equal only when all individuals have the same opportunity to function well in different social fields. This opportunity stems from the ability to convert services and goods (i.e., education, money, health and social relations) into real functioning (Nussbaum, 2006; Sen, 1992). The two terms, Capabilities and Functionings, signify the opportunities (or life-chances) that enable people to choose the kind of lifestyle they wish to pursue and to function effectively in fields of life that they value (Robeyns and Brighouse, 2010).

Methodology
This study aimed to assist in identifying the gaps among different neighborhoods from their spatial capital profiles. The study hypothesizes the existence of a relationship between this profile and the exposure of a neighborhood's residents to a set of life-chances.

Explanatory Factor Analysis (EFA) was employed on a set of variables derived from the literature and collected through a field survey that represented the concepts of social space and life-chances. It enabled a grouping of the variables in each capital form and in selected life-chances into major factors (see Galster et al., 2001).

The results obtained from the EFA were also used to test the spatial variation among the city's neighborhoods. In order to do this, the factor scores ascribed to each observation through the EFA model were employed using Analysis of Variance (Mann-Whitney a-parametric test).
The empirical study took place in the city of Haifa, which is located in northern Israel and serves as the core of the Haifa metropolitan region. The city is Israel's third largest, with a population of 273,000. For the empirical study, three neighborhoods were selected to represent the diversity of the city's social class: Hadar, Ramat Sapir and Ramat Golda.

A field survey was conducted in 2013 among households in the three residential areas selected. Data were collected through personal interviews conducted with the heads of households in the residential areas selected. A total of 170 completed questionnaires were received, representing 4.6% of the total households in the three residential areas. 25 variables measuring economic, cultural and social capital, based of Bourdieu's theory, and 9 variables measuring capabilities and functionings, based on Amartya Sen's approach (and representing life-chances), were employed in the models.

Major Results and Summary
Most of the studies that examined and measured spatial inequality have done so from the perspective of economic growth. Many scholars use economic indices in their measurement of spatial–social gaps and costs, primarily income, employment and education data, in order to assess their effect on urban and regional economic growth.

In the present study, we suggest extending the spatial inequality examination by looking at the allocation of different capital forms. Seven concepts of capital forms, obtained from employing an explanatory factor analysis on the measured variables, confirmed the existence of social space in the study area. The social space identified comprises one form of economic capital, three forms of cultural capital and three forms of social capital. Based on Sen's approach (1992), we also collected data on capabilities and functionings through our field survey. Three

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factors were obtained from employing EFA on those variables that exhibit life-chances concepts: a social-economic ability to stabilize the nuclear family, an ability to feel control over one's life and material environment, and functioning in the field of employment and academic training.

The analysis showed statistically significant differences in various forms of capital among the three neighborhoods examined. Household heads in Hadar are at a great disadvantage in most forms of capital compared to the two other neighborhoods in the sample. In contrast, household heads in Ramat Golda benefit from accumulated capital to a larger extent than do household heads in Hadar in terms of Economic, Institutional-symbolic Cultural and Objectified Cultural Capital. Of the three forms of social capital the most striking differences were obtained for the concept of Social Bonding Capital through Support and Social Control at the neighborhood level; household heads in Ramat Sapir enjoyed significant accumulated social capital compared to the two other neighborhoods.

Consistent with previous studies on the subject (Kearns & Parkinson, 2011), the living environment (neighborhood) was found to be a significant factor in social reproduction, an arena to gain or erode capital accumulation. Spatial variance in creating trust, cohesion and social control strengthens the argument that a neighborhood is a function of economic and social fields and capital accumulation.

As a result, it became clear that significant gaps existed in household heads' exposure to life-chances among the neighborhoods sampled. Residents of Hadar, who do not have a high level of capital accumulation of various types, are inferior in relation to residents in the two other neighborhoods in their exposure to life-chances that would improve their social and employment mobility. That households in Ramat Golda and also in Ramat Sapir enjoy greater exposure to life-chances is probably the result of the different types of capital accumulated by household heads in these neighborhoods. The interpretation of these findings suggests that the ability to use different forms of capital in order to build capabilities that can be translated into life-chances does not necessarily rely on economic capital.

Thus, household heads with a high level of different capital forms may benefit from exposure to similar life-chances as reflected in their functionings in the field of employment and academic training. It was expected that a significant accumulation of economic and institutional cultural capital, such as that characterizing household heads in Ramat Golda, would allow them to perform better in the field of employment and academic mobility than would household heads in Ramat Sapir and Hadar. However, our data indicate that household heads in Ramat Sapir benefited, too, from this kind of life- chances. In this sense, they used their significant social capital rather than economic or institutional cultural capital to gain support and social control. The findings of the present study can be helpful in formulating policy recommendations that will deal more effectively with the spatial and equal distribution of forms of capital within urban areas.

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RECENT CHALLENGES IN EU LABOUR MOBILITY: RETHINKING POLICIES OF EUROPEAN COHESION

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Youth unemployment, labour mobility and recent migrations in the EU
One of the most evident consequences of the economic crisis in the countries of the EU has been the recent increase in unemployment, and especially youth unemployment. At the beginning of 2008, the number of unemployed people in the European Union (UE28) was 16.7 million. By 2013, this figure had increased to 26.5 million. In recent years, the situation has improved a little, but figures still remain very high: in 2015 (1stQ) the unemployment rate stands at 10.2% (24.5 million) and the youth unemployment rate at 21.5% (4.8 million).

These figures include great spatial variations, particularly in the case of youth unemployment. On one hand, some countries, including Germany, Austria, the Netherlands and Denmark, have overcome the crisis with moderate rates of youth unemployment (less than 13%). At the other extreme we find the countries of southern Europe, where youth unemployment is almost structural and rates have overcome 35% (Portugal and Cyprus) 45% (Italy and Croatia) or 55% (Spain and Greece).

Various policies have been put into place by the European Commission (EC) to combat youth unemployment in Europe. Among others, in 2010 was launched the programme "Youth on the Move" to simplify the transition from education to employment. In 2012, EC introduced the Youth Guarantee, an ambitious programme aimed at unemployed people less than 25-30 years of age and financed by the ESF and ESIF. The main targets are the regions of the EU with the highest levels of youth unemployment. Spain, Italy and Poland are the countries that have received most funding to date.
The EC has also promoted the cross-border mobility of labour as a way of reducing unemployment. The Erasmus programme began in 1987 and has helped over 3 million young people to study in another country (Brandenburg et al, 2014). Another valuable initiative that has reinforced labour mobility is EURES. It was created in 1993 and reformed in 2012 to become the European Job Mobility Portal (European Commission, 2012). EURES has the objective of informing, guiding and providing advice to potentially mobile workers and helping employers who wish to recruit workers from other countries. At present (24 October 2015), EURES database contains more than 200,000 jobseekers CVs and 1.8 million job vacancies.

The increase of internal migration in Europe has been dramatic in the past decade. There was a progressive substitution of immigration from non-European countries for intra-EU immigration. Until 2007, this European population essentially came from Eastern Europe. Since 2008, this migration has also incorporated people from other peripheral countries and particularly those around the Mediterranean.

The new challenges of labour mobility: rethinking EC policies?
Labour mobility within Europe continues to be low in comparison with other equivalent territories within the OECD, such as Australia, Canada or the USA (EuroFund 2014). Nevertheless we are witness of a qualitative shift in the new labour migration within the EU. Changes are not only in the direction and volume of the flows, but also in the composition of migrants, which are younger, and better qualified (Seibert and Wapler, 2012).

In the last few years, new programmes launched by EC aimed improving the youth employment situation and fostering mobility. Even so, there are a number of questions that need to be taken into consideration when putting these programmes into action.

- It is necessary to improve the conditions under which young people move in order to work. The policies applied should not only help them to find work, but also to reduce the social and personal problems typically associated with such moves.
- Cohesion policies must help to deal with the complex reasons which explain why labour mobility in Europe is still lower than that in other parts of the world. Some of the reasons for this are more evident: knowledge of foreign languages, cultural differences, problems with the recognition of official qualifications. Others are not so obvious, such as: the increase in home ownership; the limited transferability of social security systems;

and the existence of double income households, which make the question of mobility more complex (Zimmermann, 2009).

- The free circulation of workers has not yet led to real equality for foreign workers. According to Eurostat data, within the EU27 unemployment is greater amongst foreign workers from other European states than amongst the national population of the country in question. In the last years of crisis and unemployment, these differences have tended to increase even more.
- Some countries have begun policies aimed at favouring the arrival of young migrants from other countries. This can be seen in Germany, which has set up an interesting programme to attract foreign workers to cover sectors of the labour market that have consistently unfilled vacancies. This is very different from the *gastarbeiter* (guest worker) programmes of the 1970s in that its objective is to attract, train and offer stability to young Europeans who can cover job positions that require qualified labour (Ganau and Porsche, 2014).
- The mobility of young Europeans in the recent past has tended to be motivated more by 'push' than by 'pull' factors. The driving force behind labour-related migrations should be based more on the attraction of the advantages offered by the destination than by a sense of "expulsion" from the countries of origin. Eurobarometer data relating to the perception of young Europeans demonstrates how more than half of young Europeans "feel that in their country, young people have been marginalized and excluded from economic and social life by the crisis" (European Parliament 2014, p. 2). The states where this sensation is greatest are exactly those of recent emigration and high youth unemployment: Greece, Spain, Portugal, Cyprus, Ireland and Italy.
- Cohesion policies should have the objective of preventing the consolidation of a core-periphery structure to labour mobility flows within the EU (Holland and Paluchowski 2013). Labour mobility in EU is far from being bidirectional. The emerging flows always follow very clearly marked, one-way paths, from the periphery towards the centre. In the future, this situation could have serious consequences for regional cohesion at the European scale.
- Receiving countries and regions will obtain significant benefits by saving the cost of educating and training these young workers. Emigrating countries have a real risk of a brain drain process. Young people with work skills and academic training is moving to regions where this kind of workforce is demanded. Within a context in which the knowledge economy, creativity and talent are keys to the development of regions and countries, we must be very careful not to set in motion brain drain processes within the EU (Musterd and Gritsai, 2013).
- The increase in mobility may help in the long run to produce a single European labour market (Krause, Rinne and Zimmermann, 2014). However, much work remains to be done before we reach this situation. Firstly, this market should help to establish real social cohesion within the EU. It cannot only act as an instrument that promotes competition in the labour market and which provides companies with cheaper labour thanks to the extension of the geographic area of this market. In this sense, working with SMEs in relation to youth employment can be seen as a fundamental part of cohesion policies.
- It would be important to move towards the harmonisation of the legislation governing labour-related issues in European countries. Unless the individual states surrender part of their capacity to establish their own norms, it will be very difficult to construct a common market for labour capable of guaranteeing equality of treatment for workers.

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A COMPARATIVE ANALYSIS OF THE SOCIO-ECONOMIC POTENTIAL OF POLISH REGIONS

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Summary

Regional development disparities in Poland, extensively described in the literature, are the result of various factors stemming *inter alia* from location attractiveness, available natural resources, human capital, access to transport and telecommunication infrastructure and public services. A particular aspect of research is the issue of socio-economic potential, treated as one of the key determinants of regional development. Socio-economic development embraces changes taking place in the social sphere, mostly of an economic nature. It shall be considered in many mutually penetrating aspects: social, economic, technological, spatial, natural, aesthetic and in timescale (Bobrowska, Piasecka 2005, Chojnicki 2010).

The aim of the paper is to analyse the socio-economic potential of 16 NUTS-2 regions in Poland in three selected years: 2005 – one year after the accession of Poland to the European Union, 2009 – the period of economic downturn resulting from the global economic crisis and 2013 – recent year for which all the variables used in the empirical analysis were available. In the first phase of the study the variables have been selected. The choice was based on current research literature, as well as timeliness, accessibility and comparability of the data. The next step was to reduce potential set of variables taking account of the statistical criteria. Given the natural differences resulting from size and number of inhabitants in the enquiry unit, it must be concluded that each characteristic is relative. Finally, rankings and clustering of the analysed regions have been provided.

The research is based on the Local Data Bank maintained by the National Statistical Office (NSO), data published by the NSO in regional statistical yearbooks, data provided by the Polish Ministry of Finance and Eurostat Regional Statistics. In the analysis a total number of 30 diagnostic variables has been used to construct the synthetic index of socio-economic potential. After elimination of variables which were highly correlated and not diversified enough, 15 variables were left to conduct the analysis. The chosen variables describe demographic potential, labour market, economic situation of inhabitants and level of economic activity, activity and financial stability of local government and socio-technical potential (see table 1). All the selected variables were equally weighted.

Table 1 Variables used in the analysis

No.	variable	s/d
X_1	population growth per thousand population	s
X_2	infant mortality rate per thousand live births	d
X_3	registered unemployment rate (as a relation of the number of registered unemployed to economically active population)	d
X_4	long-term unemployment rate	d
X_5	GDP *per capita*, EUR	s
X_6	dwellings completed per thousand population	s
X_7	entities of the economy entered in the REGON register per thousand population	s
X_8	share of entities of the economy removed from the REGON register in the total number of entities entered in the register	s
X_9	share of local government investment expenditure in total expenditure	s
X_{10}	local government debt to revenues	d
X_{11}	public hard surface roads per 100 km^2	s
X_{12}	doctors entitled to practise medical profession per 10 thousand population	s
X_{13}	outlays on fixed assets serving environmental protection per 1 inhabitant, PLN	s
X_{14}	foundations, associations and social organizations per 10 thousand population	s
X_{15}	population aged 25-64 with tertiary educational attainment level	s

s-stimulant, d-destimulant
Source: own elaboration.

To identify the positions of individual regions in the rankings, for comparison purposes, selected methods of multidimensional comparative analysis have been implemented: the method of pattern of development proposed by Hellwig, the method of standardised values and the method of ranks (Hellwig 1968, Stec 2008).

The scores of rankings carried out using selected methods of multidimensional comparative analysis presents table 2. Capital region ranks first in all the analysed regions, followed by - according to the method of pattern of development – Wielkopolskie and Pomorskie in 2005, Pomorskie and Małopolskie in 2009 and Małopolskie and Dolnośląskie in 2013. The worst performers were Warmińsko-Mazurskie, Lubelskie (except for 2013) and Kujawsko-Pomorskie.

Table 2 The rankings of regions on the basis of the use of selected methods of multidimensional comparative analysis

NUTS-2	Hellwig's method			method of standardised values			method of ranks		
	2005	2009	2013	2005	2009	2013	2005	2009	2013
Łódzkie, PL 11	8	10	13	9	11	13	7	8	13
Mazowieckie, PL 12	1	1	1	1	1	1	1	1	1
Małopolskie, PL 21	4	3	2	4	3	2	4	3	4
Śląskie, PL 22	9	7	6	6	6	6	9	6	6
Lubelskie, PL 31	15	16	7	15	14	9	14	14	9
Podkarpackie, PL 32	14	12	8	14	12	8	15	13	7
Podlaskie, PL 34	13	8	9	12	8	7	11	9	8
Świętokrzyskie, PL 33	11	9	10	11	9	10	12	10	10
Lubuskie, PL 43	5	11	14	5	10	14	5	11	14
Wielkopolskie, PL 41	2	5	5	3	5	5	3	5	5
Zachodniopomorskie, PL 42	7	6	11	7	7	12	8	7	12
Dolnośląskie, PL 51	6	4	3	8	4	4	6	4	3
Opolskie, PL 52	10	13	12	10	13	11	10	12	11
Kujawsko-Pomorskie, PL 61	12	15	15	13	16	15	13	16	16
Pomorskie, PL 63	3	2	4	2	2	3	2	2	2
Warmińsko-Mazurskie, PL 62	16	14	16	16	15	16	16	15	15

Source: own elaboration, the sequence of regions by Local Data Bank.

High (close to one) values of the Spearman's rank correlation coefficient confirmed significant compatibility of results obtained using different methods which means that in the analysis of socio-economic potential of Polish regions one of them can be used.

The calculated synthetic measure of development by Hellwig became the basis for categorisation of regions using the arithmetical mean and standard deviation of the measure of development (Nowak 1990). The group of regions with the highest socio-economic potential formed Mazowieckie (as the only one in in 2005), Dolnośląskie and Małopolskie. In 2009 they were joined by Pomorskie. In all the analysed years the only region that remained continuously in the middle group was Wielkopolskie. In 2013 this group was joined by Śląskie. The most numerous group was that of regions with low socio-economic potential. It included both the regions with low and medium level of GDP *per capita*. Apart from the Eastern Poland regions such as Warmińsko-Mazurskie and Lubelskie, the group of regions with the lowest socio-economic potential formed such regions as Kujawsko-Pomorskie and Lubuskie. The latter changed the group twice, from middle to low in 2009 and from low to the lowest in the last analysed year.

The results confirmed that despite the period of economic downturn resulting from the global economic crisis, all the analysed regions showed a positive trend of GDP *per capita*. High GDP *per capita* not always corresponded to high social potential. This is a case, for example, of Śląskie with the second highest GDP *per capita* and socio-economic potential ranked even ninth in 2005, seventh in 2009 and sixth in 2013. Good examples are also the poorest Eastern Poland regions (except for Warmińsko-Mazurskie). In 2013, according to all the selected methods, these regions scored middle in the rankings.

Analysing the results, one should not forget that they are based on seven selected variables, which are a resultant of – in some measure - random choice and data accessibility. Presumably, adding or subtracting one of the variables would lead to slightly different results. However it shouldn't underrate the importance of the research.

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A QUADRUPLE HELIX APPROACH TO REGIONAL INNOVATION SYSTEMS FOR A TRANSFORMATION TO A FORESTRY BASED BIO ECONOMY

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Summary
Climate change and environmental problems are becoming more complex, uncertain and multi-scalar, affecting a variety of actors and agencies. Therefore calling for a variety of knowledge's and values in decision making processes. New forms of government and governance are being implemented and in the same time public participation in decision making processes is pointed out as a democratic right by as well environmentalist and pressure groups as in the United Nations Economic Commission for Europe 1998 (Reed, 2008). Further collaboration between more actors than in earlier innovation systems is pointed out as important in as well

innovation policys concerning smart specialization strategies as well as in the development of a European bio economy. In the latter context the European 2012 Bio Economy Communication Strategy lifts the importance of engaging society in the transition, thereby creating a link between society and policy makers in decision making processes. Thereby, this article mainly takes its departure in the broadening field of literature around regional innovation systems and the concepts of quadruple and quintuple helix in a forestry bio economy in Sweden. More specifically it aims to examine the preconditions of a possible transition into a forestry based bio economy by the move from a triple helix to a quadruple helix system in the region of Värmland in Sweden. Which actors are involved in the current innovation system and how is environment included in the transition?

One point of departure is where the European Commission in 2012 established a strategy for the development of a European bio economy; *Innovating for sustainable growth: A bio economy for Europe*, aiming to transform the European economy into becoming more sustainable by the: *production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy* (The European Commission, 2012:3). The European Union thereby sees the bio economy as one possible way of transforming society into becoming fossil free, creating a more sustainable European economy. Further the European Commission's imposition on European regions to develop smart specialization strategies so called RIS3 – *Research and innovation smart specialization strategies* (Aranguren & Wilson 2013), have led to an extension of earlier regional innovation systems. Regions around Europe now develop smart specialization strategies to draw on their own unique resources to withhold funds from the European structural funds (Aranguren & Wilson 2013; Carayannis & Rakhmatullin 2014).

From triple to quadruple and quintuple helix
Recent debates on regional innovation systems withholds further stakeholders to be included in innovation policy, turning the triple helix model into a quadruple helix model (see for example Carayannis & Campbell 2012; Hock Heng et al. 2012; Carayannis & Rakhmatullin 2014; Lindberg et al. 2014). The triple helix model builds on cooperation between academia, public sector and firms and industries (Etzkowitz & Leydesdorff 2000; Westlund 2006; Arnkil et al. 2010), whereas the quadruple helix model adds a forth helix by the inclusion of civil society. The quadruple helix model is mainly used as a way of widening and opening up former relatively closed processes and systems of innovation (Campbell et al. 2015). However, the possible definitions made of a forth helix varies. Civil society can be defined as citizens, consumers, customers, users as well as different forms of non-governmental organizations.

Whereas triple helix can be seen as the core embedded in a quadruple helix system, Campbell et.al. (2015) develop the innovation model further into a quintuple helix system where the fifth helix represents the natural environment of society. The progression of the model can be related to the development of knowledge society. In this model the triple helix system relates to the knowledge economy, quadruple helix to knowledge society and knowledge democracy and the quintuple helix to a broader perspective of socioecological transitions and natural environments. In this way the expansion of the triple helix model is interesting in a transformation into a more sustainable society by the inclusion of a forth and a fifth helix in a forestry bio economy. In this system innovation goals and strategies should be able to integrate public opinion in issues regarding knowledge creation, creative industries, politics, lifestyles, culture, values and art, based on a close dialog with citizens (MacGregor et al. 2010). Further the quintuple helix model is seen as a way of tackling possible challenges related to global warming where knowledge and knowledge production is bound to specific subsystems such as for example the regional level (Barth 2011).

Quadruple helix and bio economy in Värmland
There are two important aspects of the development of a quadruple or a quintuple helix system in Värmland. In the regional smart specialization strategy one of the prioritized areas is the development of a forestry based bio economy. According to Carayannis et.al (2015) this could be seen as a development of a quintuple helix system where both the natural habitat and the environment are taken into concern in the development of the regional innovation system. However, the system is not fully developed due to the lack of involvement and participation of civil society in the innovation system. Several of the interviewed associations and organizations in the study conducted possess valuable knowledge about both forestry and the forest as such, but do not feel included in the transformation process. Following Carayannis et.al. (2009; 2012; 2015) the quintuple helix system is supposed to work as a chain of value creation, where all five helices are important for knowledge production and new inventions, but in the case of Värmland the quadruple helix system is not yet developed. However,

there is no actual support for a further development of a well-established triple helix system into a quadruple helix innovation architecture. Rather, a strong triple helix system can be a hinder for the transition into a quadruple helix model where it is rather a well-established system of relations between civil society and drivers of innovation that can lay ground for this kind of infrastructure (MacGregor et al. 2010).

Another aspect of the smart specialization strategy developed by the regional authorities in Värmland relates to the wide range of definitions of civil society. The definitions vary from customers, consumers, users and as responsible citizens, which makes it difficult to define the role of civil society in a regional innovation system. A critique against earlier innovation systems such as triple helix has been the exclusion of specific groups based on for example gender and ethnicity. It is therefore important to include different groups from civil society from the beginning of the innovation process and in as many of the phases of planning as possible. Another important aspect in relation to the development of a quadruple helix system is especially in what issues collaboration and/or the innovation process is about. In this case it is mainly the transformation of society into a forestry based bio economy. Several of the involved stakeholders withheld the lack of understanding the meanings of the bio economy as such which makes it problematic to engage civil society. It is also important to engage participants in as many of the phases as possible beginning with setting the goals for the project, to drastically improve the value of the resulting model in terms of its usefulness to decision makers, its educational potential for the public, and its credibility within the community as a whole (Korfmacher, 2001; Birele and Cayford, 2002; Reed, 2008).

In conclusion there are several issues that must be taken into concern in building both a quadruple and a quintuple helix system. At first the involved actors must come to a common vision of setting a common goal. In the context of a forestry bio based economy the issues concerning a transformation of society as a whole into becoming more sustainable is a relatively large and complex issue. Luyet et.al. (2012) withholds the importance of identifying both current stakeholders, but also the potential ones. In the development of a forestry based bio economy where the vision of the regional authorities is to become a model demonstrator region for the rest of the world it becomes important to take into account several aspects of the development of the regional innovation system. Based on the model of a quintuple helix system five helices are supposed to be represented, each dependent on its own subsystem all creating and developing new knowledge in a co-creation process. The public authorities then must take the role of leading the process asking several important questions regarding what it means to be a model demonstrator region in a forestry based bio economy. The vision already points at the inclusion of the civil society, but the role of civil society is not clear. How is co-creation and knowledge production supposed to happen in symbiosis between society and nature in a forestry based bio economy? What are the roles of different stakeholders in the process? How is participation supposed to happen, and to what degree? Education of the community about "bioeconomy" (natural resource management) issues and the impact of decisions on the community is a first good step. This might be accomplished through media, town meetings, volunteer and community-oriented programs, but also by using new kinds of platforms such as for example the internet.

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REGIONAL TRADE OR CLIMATE CHIRADE? CONVERGENCES, DIVERGENCES AND CHALLENGES OF AUSTRALIA'S AND INDIA'S ENERGY AND RENEWABLES POLICIES

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Overview

Against the backdrop of recent Australia-India energy/trade relations, this paper analyses the convergences, divergences and challenges of Australian and Indian energy policies. It then focuses on how, in the context of global calls for a low-carbon future, current carbon intensive energy policies interface with each country's receptivity to support for renewable energy. As an applied focus, increasing their capacity to cope with climate-change related disaster risks, calls for innovation, such as small grid and hybrid alternative energy systems supported by policy shifts in favor of a price on carbon. It concludes on energy policy challenges and how these interface with support for disaster risk reduction (DRR) capacity.

Context

Calls for action on climate change are becoming more urgent regionally and globally, as carbon-intensive 'business as usual' national government policies continue to fall short on reforms that could encourage alternative low-carbon energy sources that make a difference to national and global emissions. For many countries, reliance on fossil fuels is key to their obstinacy. Coal provided approximately 30 per cent of the world's energy needs and was the energy source used in 70 per cent of global steel (World Coal Association, 2013).

Focusing on the Asia-Pacific region, Australia and India have deepened recent regional trade relations, where Australian exports of coal and uranium to India are partially softening the hollowing out of the Australian collapsed minerals boom but (in the case of coal) perpetuating Australia's carbon-intensive energy policy focus. In the meantime, some institutional funds are divesting fossil fuel investments (Hannam, 2015) and there are popular calls for faster action on climate change and more effective policy settings for incentivizing accelerated renewable energy development. In the lead-up to the Paris November 2015 climate change talks, Groups such as IMF, World Bank and the Carbon Pricing Leadership Coalition (which includes the Californian Public Employees Retirement System, CalPERS which manages US$295billion in assets) have called for a global price on carbon.

"Business as usual" and the fossil fuel industry brings policy reform face to face with the opposition of powerful vested interests. For India, carbon intensive policy may assist growth, jobs and poverty alleviation, whereas pressure for cuts to carbon emissions and coal dependency raises issues of the moral economy of developed country demands on developing nations and the capacity for sustainable development (SD) and MDG achievement. It is unknown how new regulatory frameworks on carbon emissions may impact; unless this is coupled to other strategies.

Convergences
- Both India and Australia are former British colonies, which bestows commonalities in Parliamentary governance systems and on-going trade and investment ties to Britain.
- Both are federal systems with environmental, planning and mining exploration, energy infrastructure and energy (electricity and gas) distribution and pricing regulation devolved to state/territory level. This poses a challenge for national energy policy and a national united approach to energy/alternative energy.
- Energy policy in both Australia and India emphasizes fossil fuel reliance (Australia is a net exporter of coal and India is a net coal importing country). Both are more recently also exploiting gas.

Both national governments' policies [via subsidies, regulatory favors, and national pride especially attached to coal] (Lahiri-Dutt, 2014) have emphasized coal and secondarily gas, with only peripheral focus so far, on alternative energy. The Abbott government in Australia dismantled Labor's previous commitment to an emissions trading scheme, aimed at incentivising fossil fuel emissions [replacing it with Direct Action which rewarded polluters]. The Abbott government was publicly against wind farms and directed the Clean Energy Finance Corporation 'not to invest in wind or household solar projects because they were no longer considered emerging technologies in need of taxpayer help' (Kotsios, 2015). PM Tony Abbott remained a climate change sceptic and legitimated policies closely supported by Big Energy [coal, gas and coal-fired electricity generation].

With the change of leadership from Abbott to more moderate Malcolm Turnbull, more supportive of alternative energy, change is mooted; but the extractive industry is still politically powerful.

India launched the National Action Plan on Climate Change (NAPCC) in 2008, which undertakes to deliver 20 GW of solar power by 2022; increase afforestation and land area under forest cover from 23% to 33%; use genetic engineering to produce carbon responsive and drought-resistant crop varieties. It adopted a 'Carbon tax' on coal – at the rate of $1 per tonne on both domestically produced and imported coal, adoption of Bharat Stage IV (equivalent to Euro IV) emission standards (Deo, 2012).

In India, successive governments have invested heavily in carbon-intensive coal generation and energy is highly subsidized (Deo, 2012). At past international meetings, the moral economy argument has questioned the morality of denying developing economies carbon-intensive catch-up development. Recently however, this was used in October 2015 by the Turnbull Australian government, to approve the Indian Adani company coal mine (a company publically associated with corruption) claiming "a strong moral case" to export coal for development and linking coal export to solving energy poverty in developing countries (whilst at the same time the government has cut the aid budget). This is a rapidly evolving policy space with a recent announcement from Indian Prime Minister Modi of a plan to stop coal imports and commit US$200 million to renewable energy investment.

Divergences
- Whilst developed countries like Australia have benefited industrially from carbon-emitting energy sources, India's development demands increasing supplies to grow and to provide electricity to the millions of excluded households. (36% of Indian households have no access to electricity [Deo, 2012]).
- As the following table (Harris et al., 2014) shows, India produces about one fifth more coal than Australia but is a net importer from 572 mines in India (with 65% underground and more hazardous) and 135 mines (25% underground) in Australia [to service vastly differing populations!], but with more intensive labor in Indian mines (one million workers cf 100,000 in the Australian coal industry); and with greater mechanization of extraction in Australia. Indian coal mines are likely to

Table 1. Comparison of coal Production and consumption

Country	Number of coal mines			Coal production (per million tonnes)			Workforce (x1,000)	Coal exports (per million tonnes)			Coal imports (per million tonnes)			Coal consumption (per million tonnes)
	Total	Surface	Underground	Total	Surface	Underground		Steam	Coking	Total	Steam	Coking	Total	
Australia	135	75%	25%	415.5	80%	20%	100	144	140	284			^	130.1
China	18,557	5%	95%	3,520			5,000			*	218	71	289	3471.7
India	572	36%	64%	588.5	84%	16%	1,000			*	123	37	160	654.5
South Africa		53%	47%	255.1	40%	60%	55	72	0	72			^	182.7
USA	1,325	62%	38%	993.7	68%	32%	91.6	34	63	97			^	972.3

Source: Harris et al. 2014.

- While Australia is at risk of cyclones, bushfires, floods and tsunami, India's large population settlements and exposure to mud slides (Leh Ladakh), tsunami, cyclones, earthquakes and floods in particular, pose particular energy and communication challenges on a greater scale.

Joined-up policy making: Hybrid energy systems and improved disaster risk reduction
Overcoming state –based policy fragmentation and linking energy policy to climate change-related disasters, which are becoming more frequent and intense; demands both adaption and mitigation as well as new thinking on how innovative energy hybrid systems may bestow greater resilience. Smart grids give 'better energy efficiency and enable greater use of renewable energy sources' (Deo, 2012).

Both countries face challenges in re-directing national energy policy from fossil fuel to renewables and in developing national disaster policies and plans that support disaster risk reduction rather than the previous focus on after-the-fact recovery. India has avoided a legally binding commitment to reduce emissions (Agrapidis, 2012). In terms of rhetoric, the disaster risk reduction (DRR) paradigm is endorsed in recent national policies by both countries (Kumar, 2014; Howes et al. 2013; Victorian Bushfires Royal Commission [VBRC]. (2010)); but is under-cut by slow implementation and the dominance of post disaster reactive approaches.
In India, government-financed mitigation and preparedness measures have focused on drought and flood rather than other disaster mitigation preparedness and response efforts; with its capacity to recover from disasters complicated by caste, class, rural-urban differences, gender and minority group discrimination (Kumar, 2014, p. 202).

Climate change is driving an imperative for countries focused on fossil fuel as a prime source of energy to re-

think and invest in more diverse, less impacting energy to reduce national and global emissions.

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IMPACT OF FINANCIAL POLICIES OF LOCAL AUTHORITIES ON ENTREPRENEURSHIP: COMPREHENSIVENESS OF POLICY MATTERS

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Local authorities' role in supporting entrepreneurship is an object of ongoing discussion in the literature. At the same time, the characteristics of support for entrepreneurship by local authorities is conditioned by the level of autonomy that local authorities have in their efforts to stimulate the economic initiative. In particular, self-governments based on dualistic model (these with large autonomy of self-government activities) have more broad opportunities for policy intervention than under the unitary model (i.e. in centrally-governed countries). Parallel to this, the self-government financial system has also impact on the scale of possibilities in the area of support for entrepreneurship.

The greater the potential for generating own revenues by local-governments, the greater their ability to create solutions to support local entrepreneurship. Nevertheless, local governments with high income potential do not automatically become the entities with the highest level of entrepreneurship. Sometimes, local governments do not decide to use financial instruments (including fiscal stimulants) to support economic initiatives, and there are situations where local governments use support instruments incompetently.

Consistent with this, the article's objective is the examination of the impact of local authorities' financial policy on entrepreneurship. In the empirical part, we consider local governments' activity at the municipality level in

Poland. Local governments on the municipality level possess the widest number of instruments of entrepreneurship support, because the highest level of financial independence is to be found at this level of administration in Poland. Thus, the range of policy possibilities for supporting the entrepreneurship development is the greatest in relation to the municipalities.

The authors analyze empirically the impact of financial policy of local government units (municipalities) for development of entrepreneurship. Instruments supporting entrepreneurship based on revenue and expenditure side of municipalities' budget were adopted as explanatory variables. Level of entrepreneurship in the surveyed municipalities (measured by numbers of newly registered businesses per capita) was defined as the outcome variable. The study verifies effectiveness of financial instruments to support local entrepreneurship. It also evaluates and classifies efficiency of income and expenditure forms of economic initiatives' support. The article fits into discussion from literature that concerns instruments of supporting entrepreneurship that are available for local authorities. The key conclusion is that the comprehensiveness of the applied instruments matter.

Data was acquired from the Central Statistical Office and the Ministry of Finance (data on the impact of actions and of local government units decisions). In examined linear regression models, number of newly registered business entities divided by number of working age population was adopted as the dependent variable, while independent variables were: proceeds from sale of assets; tax revenues from real estate; tax revenues from transport; income from property (rental income and lease assets); own revenues; total capital expenditures; investment capital expenditures; share of spending on public roads in total expenditure; effects of lowering tax rates; effects of granted concessions and exemptions; effects of decision to discontinue tax arrears; effects of decision on distribution of tax arrears in installments, effects of decision to postpone date of payment of taxes, and the density of population taken as a the key control variable, consistent with the literature. The financial variables were scaled by total population.

Calculations were made for two models - (1) for averages: dependent variable for years 2009-2013, independent variables for 2003-2008, to alleviate the risk of simultaneity (endogenity) and (2)only for the data for year 2013. In first variant, several variables were removed from the model due to the lack of data, while in the second variant, 2013 was chosen, as for this year, the authors could use all variables in the model.

Based on the calculations, final dependences in both variants are similar, but in the case of model computed based on averages, independent variables explain more variance in the dependent variable (i.e. level of entrepreneurship). In this model, the following financial policy variables have the greatest impact on number of newly established companies: 1) income from real property tax; 2) total capital expenditures; 3) income tax on means of transport.

Importantly, the regression model for the averages suggests that local government units' fiscal policy expressed as tax instruments strongly affect entrepreneurship, where there is simultaneous usage of several stimulants, in particular, where tax policy is combined with capital expenditures. Model verified opinions from the literature that the impact of single stimulants on entrepreneurship (especially taxes) is decidedly weaker than applying the set of instruments. Moreover model exposed capital expenditures' importance in the process of creating conditions to develop entrepreneurship. Importantly, a combination of capital expenditure and fiscal stimulus instruments creates a relationship of a virtuous cycle. When municipalities increase capital expenditures, this in turn stimulates entrepreneurship and increases income from local taxes, which in turn creates possibilities of further entrepreneurship support. While we have to little data to test this relationship, it remains an important potential extension of the project.

Key Words: Entrepreneurship, instruments for entrepreneurship support, local development, municipal government, stimulation of economic activity

JEL Classification: H70[7], H71[8], H72[9], L26[10], O12[11]

IMPLEMENTATION AND MANAGEMENT OF URBAN INFRASTRUCTURE IN NIGERIA: CHALLENGES AND PROSPECTS

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Abstract
Nigeria has a long distorted, inadequate and ineffective infrastructure planning and delivery system with consequent negative effects on the welfare and general development of the country. The paper examines the implementation and management procedures that have led to this grim state of affairs. It is established that traditionally, the country planned, funded and delivered most infrastructures through government and its agencies, otherwise referred to as public provision. However, this strategy is bedevils with a number of problems (including; inefficiency, corruption and lack of accountability) that necessitates continued process of reforms, which unfortunately involved both loss of effectiveness in the Public Service, and ignoring the need for realistic infrastructure planning while adopting controversial 'privatization,' 'commercialization' and competitive service delivery which, further created fundamental defects in the system that has been created because: public administration remains politicized and inefficient; agency strategic planning systems are unrealistic; and (in a competitive user-pays environment) much infrastructure now needs to be demand, rather than public policy driven. The paper makes an evaluative discussions of the existing approaches of urban infrastructure delivery in Nigeria, including; a technocratic state-provider model, a poorly developed private provision model, and international-led stakeholders approaches. The paper in addition, suggests five principles among which are; protection of the public interest, value for money, accountability and fair, transparent and efficient processes as the principles on which any efficient, participatory and sustainable public infrastructure planning, financing and delivery can be based. The paper finally call for a renewal of efficiency and effectiveness in the Public Service; a strong and efficient regulatory bodies and institutions, elimination of the systemic problems that have been created; and serious efforts to develop a productive economy (and thus a stronger tax base for infrastructure and other services) as well as a participatory and collaborative framework which must involve all and sundry in the provision of urban infrastructure.

Keywords: Infrastructure, public- private- provision, concessioning, planning, implementation

INTRODUCTION: The Public Infrastructure Challenge in Nigeria

Sufficient infrastructural services are indispensable for socio-economic development of a place. As population grows, infrastructure needs expand including for transportation assets, health and education facilities, communications networks, utility and energy distribution systems, and so on.

In many parts of the World, particularly in Nigeria, whilst infrastructure needs continue to expand and increase, government revenue continues to be constrained by unstable crude oil production, significant cost of debt servicing and increasing expenditure on subsidies (Opia-Enwemuche and Oyeneyin, 2014; Ogu, 2011). This has created a huge infrastructure gap. Nigeria's infrastructure stock stands at 35% of her Gross Domestic Product (GDP), which, is below the international benchmark of 70% of GDP (Opia-Enwemuche and Oyeneyin, 2014).

The very poor state of infrastructure in Nigeria is an established fact locally and internationally. The deficit in infrastructure provision is very much a significant factor behind the comparatively higher cost of doing business in Nigeria relative to other countries.

Today, Nigeria's physical infrastructure is in grim state as shown in table 1.

TABLE 1: PHYSICAL INFRASTRUCTURE LANDSCAPE

Index	Score (out of 7)	Global Ranking (out of 148)	Scorecard
Quality of Electricity	1.8	141	Red
Quality of Air Transport Infrastructure	3.6	108	Yellow
Quality of Port Infrastructure	3.4	112	Yellow –red
Quality of Rail road Infrastructure	1.8	101	Red
Poor public Health	-	129	Red

Source: World Economic Forum (WEF) Global Competitiveness Index, 2013-2014 in Angbazo (2014)

The state of social infrastructure is not better. Table 2 shows the facility and utility situation of households in some Nigerian cities.   Moreover, power supply in Nigeria is an exclusive responsibility of the Federal government. After independence, the National Electric Power Authority (NEPA) managed the power sector for about 45 years and due to poor performance, the government decided to deregulate the sector and NEPA was transformed into a company- Power Holding Company of Nigeria (PHCN) through the Electric Power Sector Act of 2005. The company was to manage the power sector for 18 months after which the sector will be fully deregulated with several private companies emerging to handle different aspect such as generation, transmission and distribution (Olaseni and Alade, 2012). At the moment, Nigeria faces a serious energy crisis due to declining electricity generation from domestic power plants. Power outages are frequent and the power sector operates well below its estimated capacity. The current power generation in the country is about 4000 megawatts as against between 10,000 and 15,000 megawatts required (Adeyinka and Olugbemiga, 2015; Oluba, 2008).

 With respect to water and sanitation, a study of the provision of improved drinking water, households connected with water and improved access to sanitation in Nigeria compared to other nations in the league of 60 top economies shows that access to improved drinking water is generally high in all the top 20 countries (FGN, 2009). Nigeria's figure is amongst the lowest.   Nigeria Bureau of Statistics (NBS) general households survey shows that in 2007, 10.4% of Nigerians obtain water supply from pipe borne water, 26.8% from bore hole, 33.3% from well, 24.4% from streams/ponds and 4.1% from trucks/van, i.e. water vendors

Table 2: Access to Physical Infrastructure

Cities	% Of Houses with tap water	% Of Houses with flush toilets	% Of Houses with electricity
Lagos	72.7	43.5	86.2
Port Harcourt	75.0	28.6	62.4
Benin	24.9	4.0	50.3
Warri	62.4	20.9	89.7
Kaduna	40.3	24.2	53.3
Kano	36.1	3.8	60.1
Ilorin	30.7	10.3	26.8
Ibadan	22.0	20.2	56.2

 Source: State of Lagos Megacity Report, 2004.

Several factors are responsible for the present state of infrastructure in Nigeria. These include, poor funding, poor governance, corruption and economic sabotage, poor maintenance culture, population explosion, neglect of urban and regional planning, etc

Private sector involvement in management, financing, ownership and operation will in most cases be needed to ensure a commercial orientation in infrastructure services provision.

AN OVERVIEW OF INFRASTRUCTURE PROVISION IN NIGERIA
Governments in Nigeria have long recognized the vital role that modern infrastructure services play in economic growth and poverty alleviation. By far, the State/Public conventional infrastructure development is the

dominant strategy in Nigerian cities (Ogu, 2011). Government ownership and management of infrastructure is characterized by negligent and wasteful outcomes because public employees are not substantially motivated by the commercial outcome of their actions whether positive or not (Oluba, 2008).

Public provision of infrastructure in Nigeria is further complicated by:
- Attempts to integrate infrastructure planning with regional planning;
- Underlying potential problems in public financing;
- A couple of attempts at 'central planning' for infrastructure that ignored both of the previous complications.

The direction of government in going private in the area of private provision of public infrastructure is welcome. The private sector can participate in the provision of basic infrastructure in various ways. Private sector participation ranges from rendering specific contracted services (like management services, construction, etc.) to full privatization. One form of private sector participation often talked about is Public-Private Partnerships (PPP). Public-private partnerships emphasize the collaborative element between the public and the private sector for achieving a particular goal.

With the coming of PPP, the traditional method of infrastructure financing is witnessing a fundamental change, moving away from the state dominated infrastructure investment and challenging governments to design alternative sources of financing infrastructure needed for economic growth and human development. PPP as well as other forms of private sector participation bear significant risks for the public sector and for public service delivery (Thoenen, 2007).

In line with National Economic Empowerment Development Strategy (NEEDS), the federal and some states governments have been enacting laws for private sector participation in the development and maintenance of public infrastructure. The Infrastructure Concession Regulatory Act 2005 provides for the participation of the private sector in financing, construction, development, operation or maintenance of public infrastructure or development projects of the federal government through concession or contractual arrangements.

PRIVATE SECTOR INVOLVEMENT IN INFRASTRUCTURE PROVISION

With government avowed commitment to improvement of investment in critical physical infrastructure and human capital development as the cornerstone of development in Nigeria, Nigerian government embarked on several public infrastructures provision through PPP initiatives (Animashaun, 2011), including in Lagos:

- The Lagos State Roads, Bridges and Highway infrastructure (Private Sector Participation) development Board law
- Lagos Water Sector Law
- Infrastructure Concession Regulatory Commission (ICRC) (Establishment, etc.) Infrastructure projects of the ICRC include the concession of the Kainji, Jebba and Shiroro power plants in partnership the Bureau of Public Enterprise; construction of the second Nigeria Bridge, a 6-lane dual carriage way approximately 1.760 metre long and 3.4 metres wide; the concession of 33 silo complexes located in different States of Nigeria on behalf of the Federal Ministry of Agriculture.
- National Integrated Infrastructure Master Plan (NIIMP) meant to accelerate infrastructure development in the country.
- Nigeria's Securities and Exchange Commission (SEC) rules on Infrastructure Funds (IF Rules).
- Further to the IF Rules, it is also envisaged that Infrastructure Funds, Infrastructure Companies and Infrastructure Capital Companies all stand a chance to obtain superior results from investment in infrastructure in Nigeria.

At the Federal and States level, financing of infrastructure will require private sector participation in view of the rapidly increasing public demand for basic government services in the face of budgetary resources, standing at $9 - &10 billion for capital expenditure annually. No doubt, a proper framework of Public-Private Partnership will offer the Nigerian government a huge relief from the worries of urban infrastructure provision and management. The role of private sector has been enhanced recently by the regulation on Investment of Pension Fund Assets, 2012 issued by the National Pension Commission (PENCOM) (Opia-Enwemuche and Oyeneyin, 2012). PENCOM lists Infrastructure Funds and Infrastructure bonds as allowable instruments in which Nigeria's

pension fund assets can be invested. This is a significant boost to private sector investment in infrastructures financing in Nigeria.

GUIDING PRINCIPLES FOR PLANNING, FINANCING AND IMPLEMENTING PUBLIC INFRASTRUCTURE
However, PPP thrives in an environment of fair play, openness and equality under clearly defined rule of law.

In Nigeria both public and private initiatives are important for infrastructure provision for the citizenry for now and foreseeable future Therefore, public provision should be guided by some strict princilples.

The challenge of providing the public infrastructure needs requires careful management and flexibility.
 In general, public interest is to come first in any and all activities related to public infrastructure (MPIR, 2011). The public interest is paramount in the government's infrastructure provision plan. All public infrastructure initiatives should be delivered efficiently; protect and promote public health and safety; ensure high-quality public services; and be accessible to all citizens.

Appropriate public control/ownership of public assets must be preserved.

Stakeholders involved in delivering public infrastructure initiatives must be accountable.

Public-sector institutions are encouraged to be innovative and creative in delivering public infrastructure initiatives that focus on providing outstanding public services and choosing the approach that meets the Principles stated above.

CONCLUSION
Affordability is a key determinant of poor people's access to infrastructure services.
Increased private participation in infrastructure requires an adequate regulatory framework, including competent regulatory agencies.   In line with modern trend, Nigeria should consider the establishment of Infrastructure Bank to assist in the quest for infrastructure provision. This Bank among others will entice private investors into infrastructure projects.

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COMPETITION AND INNOVATION IN DOMESTICALLY-FOCUSED FIRMS: EVIDENCE FOR TRANSITION ECONOMIES

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Introduction – Competition and Innovation

Since at least Schumpeter (1934); Schumpeter (1942) there has been substantial conceptual and theoretical focus on the relationship between competition and business innovation. Schumpeter argues that larger businesses have more resources to invest in innovation activity and perfectly competitive markets are not necessarily the most conducive to R&D investment (Gilbert, 2006). Early studies found strong evidence for scale and monopoly effects, though this is less clear in later studies controlling for sectoral characteristics and with more sophisticated econometric techniques. For a recent discussion of the relationship between competition and innovation see (Beneito et al., 2015). The relationship between competition (broadly conceived) and innovation remains equivocal and this paper approaches the issue from a spatial perspective and for an under-researched category of businesses.

The influence of competition on innovation is increasingly seen to have spatial aspects, particularly in the context of clusters (Porter, 1998: 77) and the effects of local competition extend beyond the pressure for new products and processes in traditional market competition (Lublinski, 2003: 456) (Malmberg and Maskell, 2002: 439)

There now seems broad agreement that exporting businesses are more innovative (Becker and Egger, 2013; Hashi and Stojčić, 2013; Ren et al., 2015), although the direction of causation remains unclear. There is a large literature on exporting businesses, though less attention for domestically-focused i.e. businesses whose main market is local or national. However, these remain important businesses for employment, economic activity, and potentially as future exporters. If one accepts that there is no "one-size-fits-all" innovation policy, more research is needed on innovation in these types of business. This paper considers the relationship between competition (including local competition) and innovation for domestically-focused businesses.

Data and Method

This paper considers whether more intense competition is associated with increased innovation performance, using data from the fifth Business Environment and Enterprise Performance Survey (BEEPS V) conducted by the EBRD and the World Bank. This was the first BEEPS survey to include a detailed module on business innovation activities and management/organisational practices over the previous three years. The fifth round of BEEPS in 2011-2014 surveyed almost 16,000 enterprises in 30 countries in central and east Europe and east Asia.

To analyse the effects of various innovation inputs, company specific factors, and the level of competition on innovation performance, this paper employs an innovation production function. Following from Freel (2003); (Doran et al., 2012), Mansury and Love (2008) and Hall et al. (2009) the innovation production function specified below relates the probability of a firm engaging in innovation activity to a number of key explanatory factors. The following equation is estimated using a multivariate probit model is used to control for correlated disturbances (Galia and Legros, 2004) as the innovation outcomes may be related (Gordon and McCann, 2005).

$$IO_{ih} = \beta_0 + \beta_1 C_i + \beta_2 R\&D_i + \beta_3 Z_i + \varepsilon_i$$

IO_{ih} is a binary indicator of whether firm i engaged in one of four forms of innovation, where h indicates the type of innovation. These are new to firm (NtF) product innovation, new to market (NtM) product innovation, organizational innovation and process innovation. C_i is a measure of the level of competition experienced by form i. Survey respondents are asked to indicate the number of their competitors. The innovation production

function is estimated using the log of the number of competitors, and the same indicator squared to identify whether the relationship between competition and innovation is linear. In addition, to estimate a potential inverse U-shaped relationship between innovation likelihood and competition, a categorical variable is generated representing different categories of competition intensity. Other variables are included as these have been shown in the literature to affect innovation output, and are represented by a vector, Z_i.

Results

Table 1 shows the results of multivariate probit analysis of the determinants of each of four innovation outputs. When controlling for traditional factors shown in the literature to affect the likelihood of innovation, the results indicate that the level of competition identified by domestically focused businesses is positively associated with three of the four innovation outputs (the exception is NtM). However, the negative coefficient on the squared-term suggests that there are diminishing returns to competition. The urban scale of the business' location affects only non-technological process innovation where businesses in each conurbation size are more likely to innovate relative to the smallest city size.

The results are consistent with the majority of empirical studies of business innovation in finding that the performance of R&D, capital investment, and firm size are positively associated with innovation output. The estimation also controls for business age, whether the business is domestic or foreign-owned, whether it has single or multiple plants, and whether it operates in low, medium or high-technology sectors. These are not reported due to space limitations. Businesses whose primary market is local are less likely to introduce all types of innovation, with the exception of organizational innovation, relative to businesses who primarily trade nationally or internationally.

These results are consistent with previous empirical studies of competition and innovation, where greater levels of competition (measured by the number of competitors) is associated with greater innovation, though it is notable that this relationship is non-linear and the likelihood of innovation grows at a decreasing rate with additional market entrants. This suggests that as markets grow the marginal profitability of further entrants diminishes and reduces the potential returns to innovation.

Table 1 Multivariate Probit Estimation of Determinants of Innovation (Standard Errors in Parentheses)

	Innovation Type			
	Product (NtF)	Product (NtM)	Organisation	Process
Level of Competition (log)	0.145*	-0.030	0.159**	0.194**
	(0.080)	(0.081)	(0.087)	(0.084)
Level of Comp (log) Squared	-0.040***	-0.018	-0.038***	-0.040***
	(0.012)	(0.013)	(0.014)	(0.013)
R&D active	1.206***	0.995***	0.676**	0.907***
	(0.260)	(0.273)	(0.284)	(0.276)
Size of firm (log)	0.068***	0.051**	0.148***	0.101***
	(0.021)	(0.022)	(0.023)	(0.022)
Investment	0.243**	0.267***	0.268***	0.266***
	(0.103)	(0.105)	(0.108)	(0.105)
Main Market is local	-0.353***	-0.369***	-0.251**	-0.175*
	(0.092)	(0.097)	(0.102)	(0.097)
Capital or pop > 1million^2	0.098	-0.010	0.320*	-0.048
	(0.152)	(0.162)	(0.169)	(0.163)
Pop 250k to 1million^2	0.177	0.133	0.340**	0.037
	(0.127)	(0.08)	(0.142)	(0.134)
Pop 50k to 250k^2	0.001	-0.037	0.109	0.080
	(0.135)	(0.145)	(0.153)	(0.144)
No of observations	4,043			
Wald Chi-square (prob)	9591.54 (0.0000)			

Log Likelihood   -6339.97

To test for the presence of an inverted U-shape between the level of competition and innovation, competition categories are generated. Table 2 shows the percentage of innovators for each type of innovation classified by competition category. For each type of innovation, the proportion of innovators is lowest in the category with the largest number of competitors. However, the highest proportion of innovators for each innovation type occurs in the medium-high competition category. A simple analysis of this bivariate relationship would suggest that the relationship between innovation likelihood and level of competition is non-linear.

Table 2 Percentage of Businesses Introducing Innovation by Competition Category

	Product (NtF)	Product (NtM)	Organisational	Process
No Competition (0)	34%	26%	25%	17%
Low Competition (1-10)	35%	25%	28%	25%
Low -medium (11-50)	37%	25%	30%	27%
Medium -High (51-100)	38%	33%	33%	28%
High Competition (101 or more)	20%	15%	18%	16%

To explore the potential inverted U-shape relationship between competition and innovation, a multivariate probit estimation is performed including a series of dummy variables categories of competition levels. The relevant coefficients are shown in Table 3.

Table 3 Extract of Multivariate Probit Estimation of the Determinants of Innovation showing results for Competition Category Effects (Standard errors in parentheses)[1]

	Product (NtF)	Product (NtM)	Organisational	Process
No Competition (0)	0.083	0.117	-0.005	-0.309***
	(0.112)	(0.121)	(0.124)	(0.135)
Low Competition (1-10)	-0.010	-0.008	-0.045	-0.0881
	(0.064)	(0.069)	(0.067)	(0.068)
High Competition (101 or more)	-0.283***	-0.255***	-0.246***	-0.0301***
	(-0.07)	(0.075)	(0.074)	(0.076)

The results suggest there is little evidence of an inverted U-shape relationship between competition levels and innovation. Lower competition levels are not associated with lower innovation likelihood, but higher levels of competition reduce innovation likelihood. Considering the results of Table 1 and Table 2 together, there is evidence that, at lower levels of competition intensity, business innovation increases with new entrants, until a 'tipping point' is reached after which the entry of new firms reduces the profitability of the industry and the returns to innovation.

To explore the effect of greater local competition on the likelihood of innovation, an interaction term is generated combining the number of competitors and the binary variable indicating a business' primary market is local. Table 4 presents the relevant coefficents from a multivariate probit estimation. The results indicate that greater levels of competition in local markets is associated with a higher propensity to product innovate.

Table 4 Extract of Multivariate Probit Estimation of the Determinants of Innovation showing results for the interaction between the number of competitors and primary local market (Standard Errors in Parentheses)

	Innovation Type			
	Product (NtF)	Product (NtM)	Organisational	Process
Competition in local market	0.063** (0.029)	0.053* (0.031)	0.003 (0.028)	0.028 (0.032)

Summary

The traditional patterns of R&D activity, firm size and capital investment are important for innovation outcomes. Higher levels of competition are associated with greater likelihood of innovation, but this rises at a decreasing rate as competitor numbers grow. Businesses in the high competitors category are significantly less likely to introduce innovations relative to firms in the medium competition categories, Firms that rely on the local market are significantly less likely to introduce innovations, but from the interaction analysis, increased competition in the local market increases the likelihood of firms introducing new to firm and market innovations in the local market, pointing to some element of a local rivalry effect.

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Summary

The subject of technological transfer, as a way of approaching innovation in business in particular has stirred a long time debate. Most questions concerning the matter have touched upon a wide range of issues, from general broad aspects such as R&D benefits and implications on society level to more detailed or concrete ones regarding the way in which innovation is intervened into businesses, and ultimately in our everyday lives.

Inter-mixing two or more sectors of human activity usually creates spillover effects (technology, general knowledge, processes, productivity) with beneficial consequences over the way in which cooperation is perceived, or as Mattes (2012) noted, the ability to manage heterogeneous cooperation. Cross-sectoral or multi-sectoral business development has been deemed as the secret ingredient for business growth or business development. Although Schumpeter (1934) defined innovation in business as a multi-faceted approach which goes beyond technological change, in this very particular age, technology, especially IT&C, has become the horizontal support that creates advantage and positioning. In intensive knowledge economies collaboration among industries, sectors and stakeholders must happen as often as possible for the purpose of valid differentiation.

The concept of proximity was limited to a geographical dimension, but more recent literature has shown that it takes different forms which may concur or surface individually. Boschma (2005) describes and analyses five forms of proximity: Cognitive proximity, Organizational proximity, Social proximity, Institutional proximity and Geographical proximity. He argues that too much, but also too little proximity are both detrimental to innovation, and that a certain balance is required. In other words, proximity can favor innovation, but if the composition is not appropriate than the actual results might not concur with expectations. Although geographical proximity is desired, it is not sufficient for innovation processes to occur. Boschma concludes by arguing that cognitive proximity is the most important ingredient in any innovation and technological transfer processes, and is a prerequisite for interactive learning processes.

Mattes (2012) takes the subject further and starts with the generally accepted hypothesis that innovations usually "involve the challenge of enabling renewal based in heterogeneity and facilitating the integration of knowledge through proximity". The author argues that proximity is a multi-faceted approach (stemming from Boschma's theory), but is only one side of a coin and that heterogeneity (the other face of the same coin) needs to be treated with due diligence in relation to innovation.

Cluj Innovation City is an integrated urban development project that envisions the structuring of a collaboration ecosystem based on education, innovation and entrepreneurship, with the main goal to create a sustainable community over the next 20 years. The project will use local valuable assets such as the academic environment, medical centers, the IT cluster, the large number of graduates and postgraduates, to make Cluj Innovation City the motor of development for the entire North-West Region of Romania. Acknowledging that viable technological transfer and innovation processes (both concepts being at very heart of this particular project) are prerequisites for the success of this initiative we started an investigation to assess whether they are likely to occur in the planned environment or not. This is an ongoing process and is not entirely elucidated, which on hand limits the scope of this paper, on the other hand creates new avenues for research.

The project builds heavily on the geographical proximity of its main supporters and will use local valuable assets such as the academic environment, medical centers, the IT cluster, the large number of graduates and postgraduates, to further advance Cluj as the motor of development for the entire North-West Region of Romania. Close geographical proximity is clearly demonstrated in Figure 1. Cluj Innovation City - Overview dispersion of main existing infrastructure mix. The drawing illustrates locations of main actors and stakeholders across the city of Cluj.
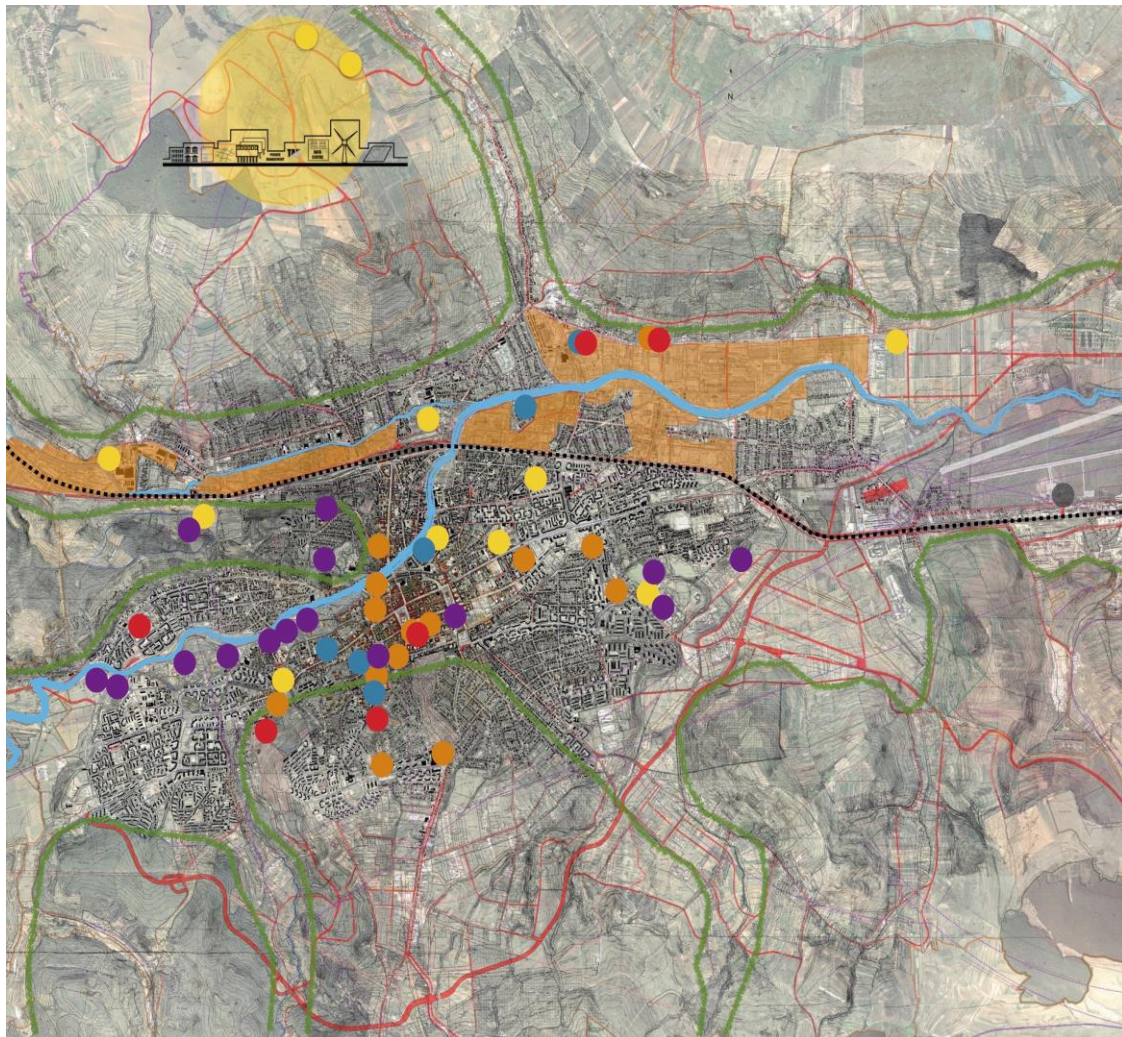
Figure 1. Cluj Innovation City - Overview dispersion of main existing infrastructure mix.

Cluj Innovation City (CIC from now on), has been initiated by a number of key institutions, all headquartered in Cluj, the economic and intellectual capital city of Transylvania, as shown in *Figure 2. CIC Initiators:* Cluj IT Cluster (the flagship cluster initiative in Romania and the main promoter of CIC project), Babes-Bolyai University (the largest public university in the country), Technical University of Cluj-Napoca, University of Agronomic Sciences and Veterinary Medicine University of Cluj-Napoca, Medicine and Pharmacy University 'Iuliu Hatieganu', Music

Academy "Gheorghe Dima" and Arts and Design University of Cluj-Napoca, but also the County and Local Councils of Cluj.

Fig. 2. CIC Initiators.

Cluj Innovation City Foundation represents the management entity responsible to carry out these requirements and to govern the future development of the city. The Cluj Innovation City project spans across 25 years of development and collaboration between local, national and international partners. The development strategy needs to be defined and tracked during this period while ensuring continuity despite political and administrative changes.

Interestingly, the foundation that has been created to govern the entire project approach also includes a number of three individuals with economic background, of which one is of German and Swiss nationality. During an unstructured interview with the Executive Director of the CIC Foundation we learned that the intention of the founders is to safeguard the economic and social dimensions of the project and therefore decisions are filtered through professional expertise rather than political. It is the first large scale projects that unites under the same roof important actors that are capable to shape the future of Cluj and its surroundings. The six public universities have been experimenting with a consultative structure they decided to form in order to better align their general

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policies. However, no initiative has been launched to encompass other sectors until CIC was proposed to the community. A snapshot of the proposed concept is provided in Figure 3. Cluj Innovation City – The Vision.
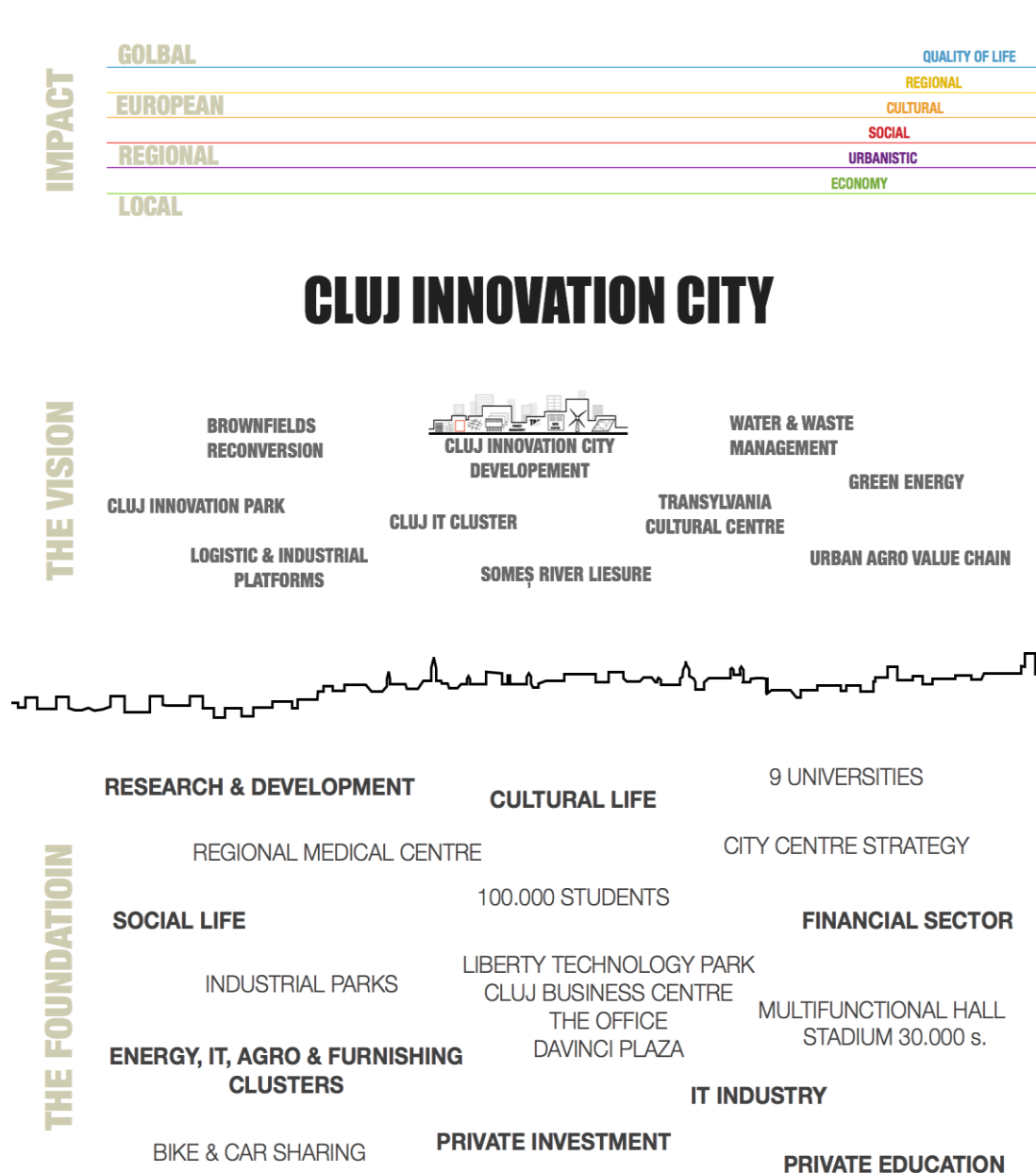

Fig. 3. Cluj Innovation City - The Vision

Since its official launch (March 2014) CIC has gained recognition and support at EU level as a development project that has integrally embedded the objectives of the Investment Plan proposed by Junker's Commission, while before Barroso declared that "The Commission welcomes this kind of initiative, which fosters the transfer of knowledge and innovation and also the cooperation between research and business". The project has created unprecedented international reputation for Cluj and created a series of expectations among community members such as stop of brain drain phenomenon, highly skilled workforce, consistent technological transfer and innovation based development of products and services. Nevertheless, and strangely given the public support politicians of all colors expressed for the project in numerous occasions, national recognition is still lacking.

What is than missing for CIC to become the envisioned urban scale living lab? In our opinion CIC's major challenge is the way in which key people and the entities they are part of understand collaboration and share

knowledge base. In other words cognitive proximity is still a desire rather than a reality. However, given the determination of some of the regional actors (Cluj Local Council and the Cluj IT Cluster, which have been the champions of the initiative so far) to take the project further, it is reasonable to predict that eventually will get the necessary momentum to take off. For that to occur, bridges need to be built on pillars of trust, or as Balland and all (2015) argue, knowledge networking is needed as they "typically increase the degree of proximity between the actors involved". When collaborative projects of innovative nature will be the norm rather the exception CIC will have more chances to translate into reality. Technological transfer becomes crucial foundation for improved and efficient proximity, however it will need to take into account both knowledge networks and heterogeneity as key enablers of innovation and, ultimately, regional socio-economic advancement or differentiation.

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Acknowledgment

INFORMAL MARKET PLACES AND LOCAL GOVERNANCE; EVIDENCE FROM THE BATKHELA BAZAAR (MALAKAND, PAKISTAN)

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Introduction

This research investigates the role and place of bazaar in the local governance by placing it at the center of formal and informal institutional continuum. This paper argues that informal institutions provide for internal governance of the bazaar, and also underpins informal organizations to interact with local governance institutions in their respective regions.

Two premises together constitute this argument. (1) Informal institutions underpinning interactions within the bazaar to shape its social order (Fligstein and Dauter, 2007; Redmond, 2010; Beckert, 2009). (2) These informal institutions accord legitimacy to informal organizations that interact with formal institutions which has significant implications for local governance. Providing theoretical foundations for this argument from a wide range of literature on marketplaces (Lyon, 2007; Lyon and Porter, 2009; Erami and Keshavarzian, 2015; Alf, 2015; Jan, 2014; Assadulah, 2014, Dines, 2007, Watson, 2009; Heulmeyer, 2013; Heabert et al, 2015) I substantiate my argument with an account of the case-study of Batkhela bazaar in Malakand Pakistan.

This interaction of bazaar with the local governance institutions is not limited to the developing states; scholars in the developed world also give but a passing reference to this aspect of marketplaces (Dines, 2007; Heulmeyer, 2013; Watson, 2009; Heabert et al, 2015). This paper asks: what role do informal institutions play in the internal order of the bazaar, and how these informal institutions shape bazaar's interaction with the formal institutions at local level?

Conceptualizing informal institutions

Considering conceptual opacity surrounding the concept of informal institutions makes it imperative to set out a precise definition of informal institutions, and to disentangle it from other closely related but distinct concepts (Helmkeand Lavitski, 2004; North, 2005). This paper employs the concept of informal institutions in the Way North, 2005:58) would use it, that is to say, they are norms or rules of the game. In addition, that underpins informal organizations in an environment where formal institutional capacity is in short supply (Amoko and Lion, 2013).

Since Douglus North's (1990) definition of informal institutions, different studies has variously conceptualized informal institutions. This plethora of definitions has added to the slipperiness of the term. For any analysis of interaction between formal and informal institutions, defining informal institutions with precision is a prerequisite. Mohmand and More (2015) has recently recapped the difficulty involved in defining informal institutions, however, they applied it as a generic term including both informal institutions and informal organizations to avoid conceptual confusion. They note however, this tendency of loosely defining the term creates confusions instead providing a foundation for a more transparent analysis of formal and informal institutional interaction. For instance, Amoko and Lyon (2013) in their recent study on informal market traders in Ghana argued that "norms underpin informal institutions "whereas most of the studies consider norms as an informal institutions (Williamsons, 2009; Pejovich, 1999; Mohmand and Moore, 2015).

Helmki and Lavitski, 2006:721) argue that a clear distinction should be made between informal institutions (rules of the game), and informal organizations (Players of the game) (Mohmand and Moore, 2015; North, 1990B; North, 2005:58). Keeping this distinction in mind, informal institutions are defined as the rules of the game. That set the patterns for informal organizations. These informal organizations can be either "social institutions" (Heris-wite, 2005), trader networks (Lion, 2003; 2007), traditional leadership or strongman (Mohmand and Moore, 2015) or networks of business ties (William and Steer, 2010). In the Following sections, the role of these informal institutions especially reciprocal expectations (1) in the internal governance of the bazaar and (2) its interaction with the local governance process is explained.

The dynamics of informal marketplace governance

Viewing informal markets as an ungoverned space obscures more than what it reveals (Schoofs, 2015:11-12). They have their own social order underpinned by informal institutions that operate at different levels in different contexts (Varman and Costa, 2009; Erami and Keshavarzian, 2015). These informal institutions in some respects substitute the short supply of formal institutional capacity. Though formal institutions define rules of the game, and steer economic activities. However, these formal institutions are imperfect in the way they govern economic relations. This imperfection of formal institutions highlights the role of informal institutions in governing economic transactions in informal markets (Web et al, 2014:6-7).This imperfection of formal institutions is more pronounced in the informal marketplaces because of their "exclusion" or "exit" from the formal economy (Perry et al, 2007). This lack of institutional capacity explains the need for self-organization of these marketplaces (Redmond, 2010).

Stability and predictability in informal marketplaces is thus provided by informal institutions embedded in the socio-cognitive structures in which these actors operate (Gowan, 2010; Annan, 2006; North, 2005: chapter 5).Be it illegal markets (Beckert and Wehinger, 2012), more legalized marketplaces under the patronizing state policy (Endris, 2013), or unregulated informal economic activities (Web et al, 2009;2014), these informal institutions define the ways to navigate in their respective institutional environments. They also help understanding the ways in which these informal marketplaces come into contact with the formal institutions

Informal marketplace interaction with local governance institutions

Interaction of informal marketplaces with local state authorities occurs variously in varied contexts. In some transition economies such as Poland (Marsinchak and Van der Veld, 2008:817) or developed states like Hawaii they lobby through the local state authorities for their business interest (Kelly, 2003). While in some developed states they generate local reaction against local authorities' decisions that are detrimental to the life of these marketplaces (Dines, 2007). In some transition economies some members in the bazaar have direct connections with state officials (Specter, 2008); while in others their managements interact with the municipal authorities on issues related to bazaar (Huelmeyer, 2013). However, our concern here are those marketplaces that are governed by informal institutions and informal organizations (Bromly, 1978; Amoko and Lyon, 2013), not by public or private authorities (Heulmeyer, 2013; Heabert et al, 2015).

The role of informal institutions is well documented in the informal economy literature. From daily survival strategies (Buss, 2001) to career advancement (Lyon and Snoxell, 2005), from managing traders relations in the marketplaces (Lyon, 2003) to substitute for the imperfections of formal institutions in the complex institutional interaction (Web et al, 2014).Our concern here is the role of these institutions in the internal governance of informal marketplaces and to compliment or substitute for weak formal institutions. In addition, these informal institutions underpin informal organizations (Lion and Porter, 2009).[12] These Marketplace associations or trader unions interact with the local state authorities on behalf of the bazaar.

This detour into the marketplace literature brings us to our first question: How informal institutions underpin informal organizations within bazaars that accords them significance in their interaction with formal institutions?

Methodology

Accompanied by an interview-based survey questionnaire, a short ethnography of Batkhela bazaar in Malakand District of Pakistan was conducted from July to September, 2015. Adopting a Pragmatic approach to investigate the subject (Woolcot, 2002); the research was designed into two phases.

In the first half, a quantitative survey, comprised of 250 interview-based questionnaires was conducted. The instrument was designed around three major themes of the research: features of economic transactions in the bazaar, informal relations and their impact on formal governance process; and social capital and local governance. the decision to conduct an interview based survey was guided by (1) the accuracy of the responses because the instrument consisted of mixed items; (2) to follow up some important issues; (3) to rectify problems (if any) arising during the survey; and building rapport with the business owners in bazaar .

For the population of 4000 large and small businesses and service units, a sample of 250 was surveyed. After acquiring bazaar register, containing the names of owners and their firms, a stratified random sample was designed (Leach and Onwuebguzie, 2007). The information from the register, along with chats with 3 informants in the bazaar facilitated the stratification of sample. Within these categories, I went randomly to survey their population.

In the second half of the research, I conducted 10 semi-structured interviews designed around the internal governance of the bazaar, and its interaction with the formal governance structure at the local level. The sample here was purposive based on the logic of research question, and key informants identified during the quantitative survey.

Findings and Discussion

The everyday realities of bazaar and frequent interactions make informal institutions inevitable. They accord legitimacy to informal organization which is critical to the social order of bazaar. They mediate problems within the bazaar, and interact with local state authorities as representatives of bazaar.

Our findings show that 93 percent of the population is the members of bazaar union. 57% are members because of the expectation that it will solve their problems, while 27 percent believe that problems arising in the bazaar cannot be solved alone.

It does not have any written code, or strict enforcement mechanism. Majority of the business owners respect its mediations because it is rooted in the shared expectations, and tacit consciousness to retain order in the bazaar life.

Its interactions with formal institutions take a variety of forms. This interaction sometimes plays a complimentary role in weak formal institutional context. A critical example from our findings is the ineptitude of local police, or the distrust of business owners in its capacity. The following table substantiates this finding.

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[12] Compatible with our definition of informal institutions, Marketplace associations are treated as informal organization in our conceptual frame (North, 2005:59)

Table 1: Security impact on businesses: Response and percentage

Response	Percentage
No response	0.7%
Very significant	2.2%
Significant	9.6
Neither significant nor insignificant	0%
Limited significance	14.0 %
Of no significance at all	69.1%

Out of Those 31.1% who rated the impact of police on their business on 1st, 2nd, and 4th scale, 45% attributed this impact to the provision of security by police.

This ineptitude of security police and the distrust of business owners in its capacity resulted in an informal organizational arrangement. The bazaar union, especially for security arrangement during the night has created a security system. The watchmen are paid collectively by the business owners, and are registered with the union. Moreover, the bazaar union has registered these watchmen with the local police in order to deal with any misgivings.

Conclusion and the Way Forward

Besides their traditional characteristics as a social space, images of traditional economy and containers of diversity, Informal marketplaces offers a fertile ground to explore new vistas of exploring of formal and informal institutional interaction. This research has attempted to unearth the role of bazaar in this formal and informal institutional continuum. Economic and un-economic transactions in the bazaar, their related problems and shared expectations and practices of the marketplace actors highlight the ways in which predictability in the social order of the bazaar is created. These informal organizations are underpinned by informal institutions which offer a mandate to these informal organizations to interact with formal institutions at local level.

However, instead of providing an authoritative view, further research is invited on the following line.

First, how these informal organizations of informal marketplaces can fit in the calculus of policy makers to view them as significant factors in sustainable development?

Second, the informal organizations of marketplaces, underpinned by informal institutions play either a complimentary, substitutive, or competing role in their interaction with local formal institutions? And what are its implications for their respective local governance environments?

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THE EVOLUTION OF SPECIALIZATION IN THE EU15 KNOWLEDGE SPACE

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ABSTRACT

Attention has been directed at aggregate measures of knowledge production in regional and national contexts, but little consideration has been given to the properties of knowledge produced in specific places. How does the nature of produced knowledge vary over space, and what conditions the scope of technologies generated in different locations? The general consensus is that technological change is guided by past activities (path-dependency), local capabilities (place-characteristics), and influenced by the embeddedness in regional, national and international networks.

In this paper we use patent co-classification data from the European Patent Office (EPO) to measure the distance between all pairs of 629 International Patent Classification (IPC) categories. A multi-dimensional scaling algorithm allows us to visualize these distances in a map of the EU15 knowledge space. We trace the evolution of that space from 1981 to 2005 (**Figure 1**). The patent class distance data are combined with counts of patents by IPC categories to measure the average relatedness (specialization) of knowledge produced within each NUTS2 region. We show that knowledge specialization has increased significantly across EU15 regions over time and show those regions that have the most specialized and the least specialized knowledge bases (**Figure 2**). Changes in the average relatedness of regional knowledge cores are decomposed to reveal the contributions of technological entry, exit and selection processes over space and time. In a final section of the paper, technological diversification and abandonment at the NUTS2 level are modeled as a function of proximity to the knowledge core of the region and to knowledge spillovers from neighbouring regions that are mediated by social and spatial distance.

We are particularly interested in whether European integration has led to increasing technological specialization at the NUTS2 regional-level. An increase in the specialization of knowledge production across EU regions might signal the emergence of a European market for technology, a deepening spatial division of labour in R&D and attendant gains in the efficiency of invention and innovation. Though there has been considerable interest in the relationship between European market integration and the geographical redistribution of economic activity (Krugman and Venables 1996), this has not typically focused on the production of knowledge. A recent related literature on "smart specialization" in the EU is more explicitly directed toward knowledge-based regional policy (McCann and Ortega-Argilés 2013). Our focus on the regional specialization of knowledge production reflects the central role that concentration plays in regulating economic performance (Marshall 1890; Duranton and Puga 2004), the resilience of regional economies (Hassink 2010; Martin 2012; Balland et al. 2014) and trajectories of economic and technological development in space (Hidalgo et al. 2007; Boschma et al. 2013; Rigby 2013; Boschma et al. 2015). We study the European Union because the knowledge structure of this aggregate economic space has not yet been mapped. At the core of our work is a relatively new method of measuring the relatedness or the distance between technology types. This method overcomes the failure of the Herfindahl Index (with categorical data) to explicitly consider variations in the "distances" between the categories over which specialization is computed.

Technological relatedness between EU15 patents increased between 1981 and 2005. In other words, the distribution of patents within the EU15 knowledge space has become more compact. This reflects growth in technological relatedness within all aggregate patent technology classes, and even faster growth in the share of patents produced in those aggregate technology classes where individual knowledge subsets are closer to one another than on average. Alongside the growing compactness of the EU15 knowledge space, we show that technological relatedness, or specialization, within individual NUTS2 regions of the EU15 increased on average by 33% between 1981 and 2015.

Changes in technological specialization within EU15 NUTS2 regions were decomposed to examine the influence of technological diversification (entry) and abandonment (exit), along with selection (differential growth within incumbent classes) and an incumbent effect that captures changes in average relatedness between patent classes. Averaged over all time-periods, entry and exit exert the largest influence on shifts in regional technological specialization, responsible for about 34% and 29% of changes, respectively. The exit of regions from technology classes increases specialization, suggesting that technologies remote from the knowledge core

of each region are being abandoned. Entry tends to reduce technological specialization within regions, as the process of diversification adds patents to regional knowledge portfolios that are on average further from the core of those portfolios than existing patents. An exploratory regression model links technological entry and exit across the EU15 to the existing knowledge base of regions. The model confirms that patterns of technological diversification and technological abandonment are strongly conditioned by the proximity of technology classes to the knowledge cores of regions. Further, model results suggest that technological choice within regions is also influenced by the knowledge cores of other regions. That influence is mediated both by spatial proximity and social proximity, with the former, perhaps, playing the larger role.

The increase in technological specialization across the EU15 might be taken as additional evidence of the impact of cohesion policy and efforts to better integrate knowledge production sub-systems across the European Union. Further work is required to show whether regional specialization in technological know-how across Europe drives greater returns to knowledge production inputs, and to explore how the institutional structures of regions might be related to the changing technology patterns that we document.
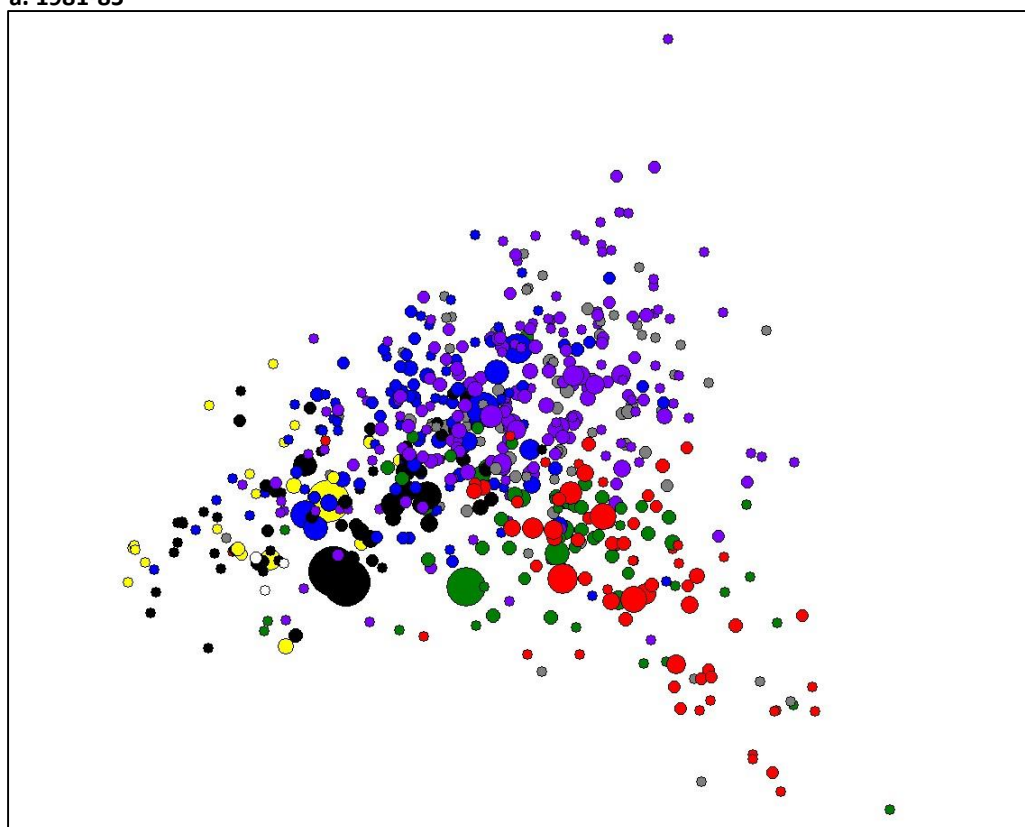
JEL CODES: O33, O52, R12

KEYWORDS: Evolutionary Economic Geography, Geography of Invention, Technological Change, Technology/Knowledge Space, Patent Data Analysis, Entry/Exit/Selection, Decomposition Analysis

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Figure 1: EU15 Knowledge Space
a. 1981-85

Notes: Red = Electronics (1), Green = Instruments (2), Black = Chemicals (3), Yell
Yellow = Drugs & Medicine (4), Blue = Industrial Process (5), Purple = Machinery & Transport (6), Grey = Consumer Goods (7). The nodes are sized according to the number of patents and the sizing is consistent over time. The largest patent class in 2001-05 (A61K = Preparations for medical, dental or toilet purposes) contains 10,360 patents.

Avg. Technological
Relatedness
EU15/N2 1981-1985

| 0.0 - 0.015 |
| 0.016 - 0.030 |
| 0.031 - 0.050 |
| 0.051 - 0.137 |

Avg. Technological
Relatedness
EU15/N2 2001-2005

| 0.0 - 0.015 |
| 0.016 - 0.030 |
| 0.031 - 0.050 |
| 0.051 - 0.137 |
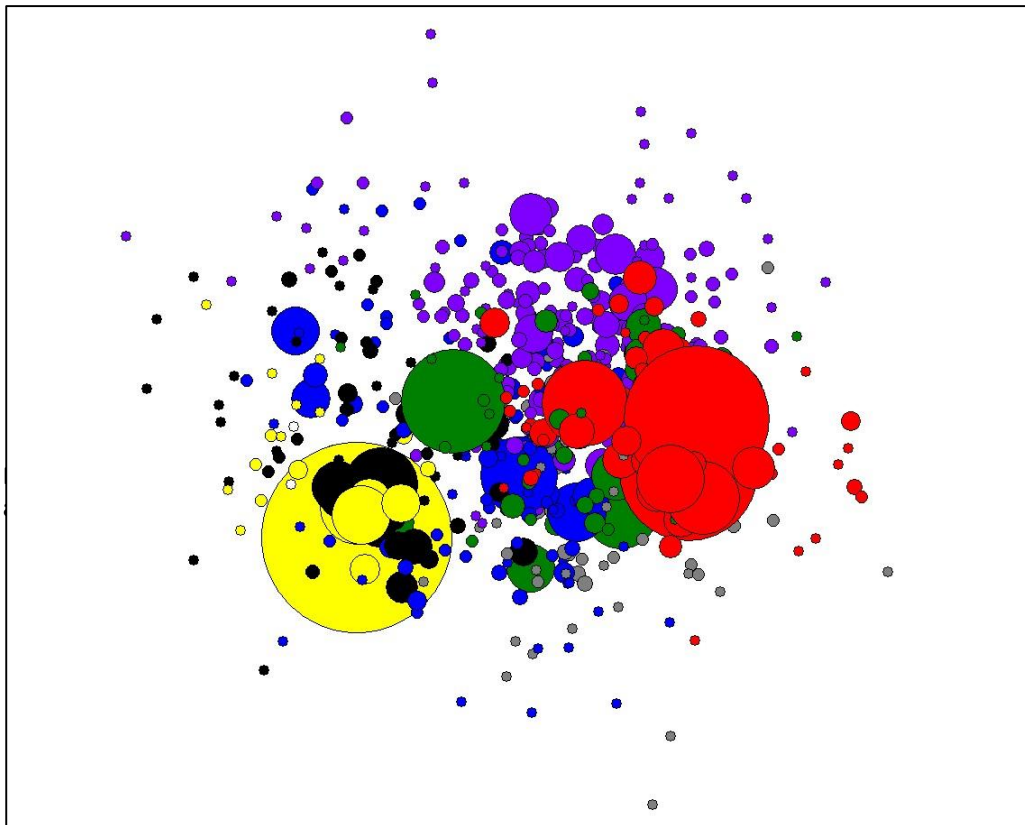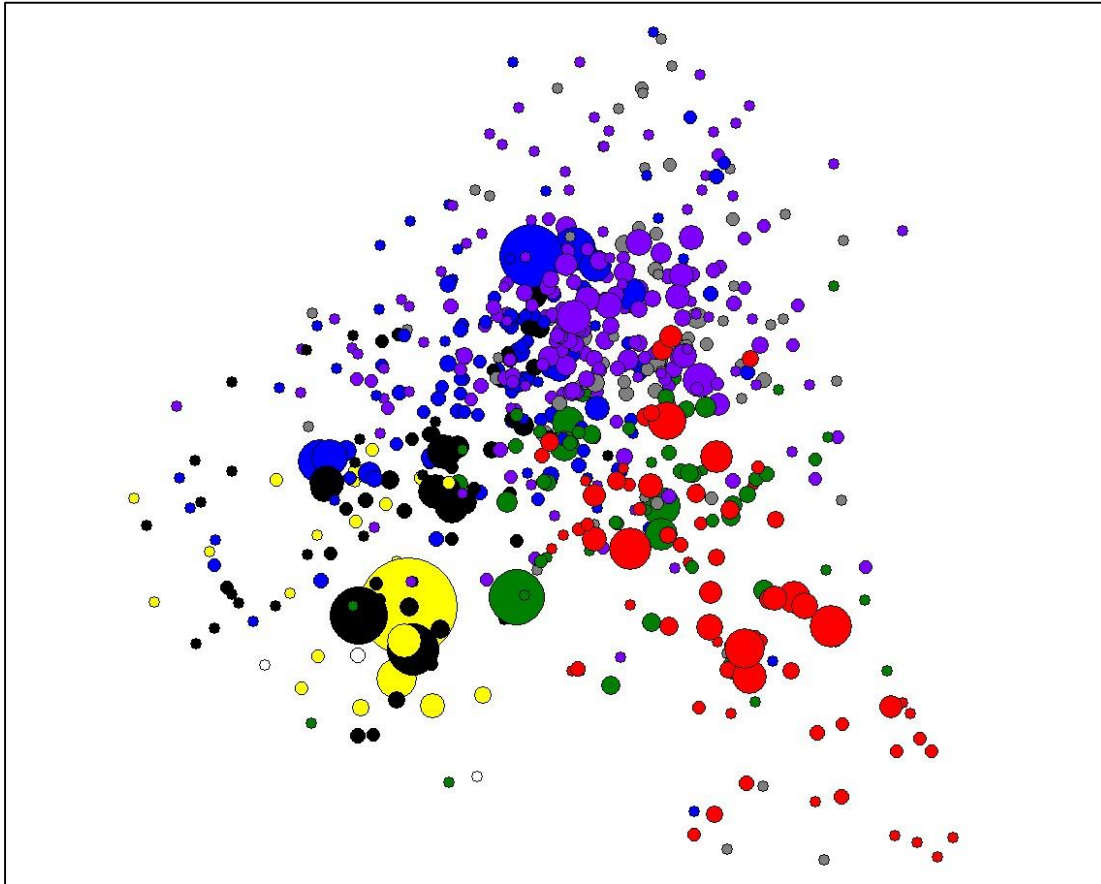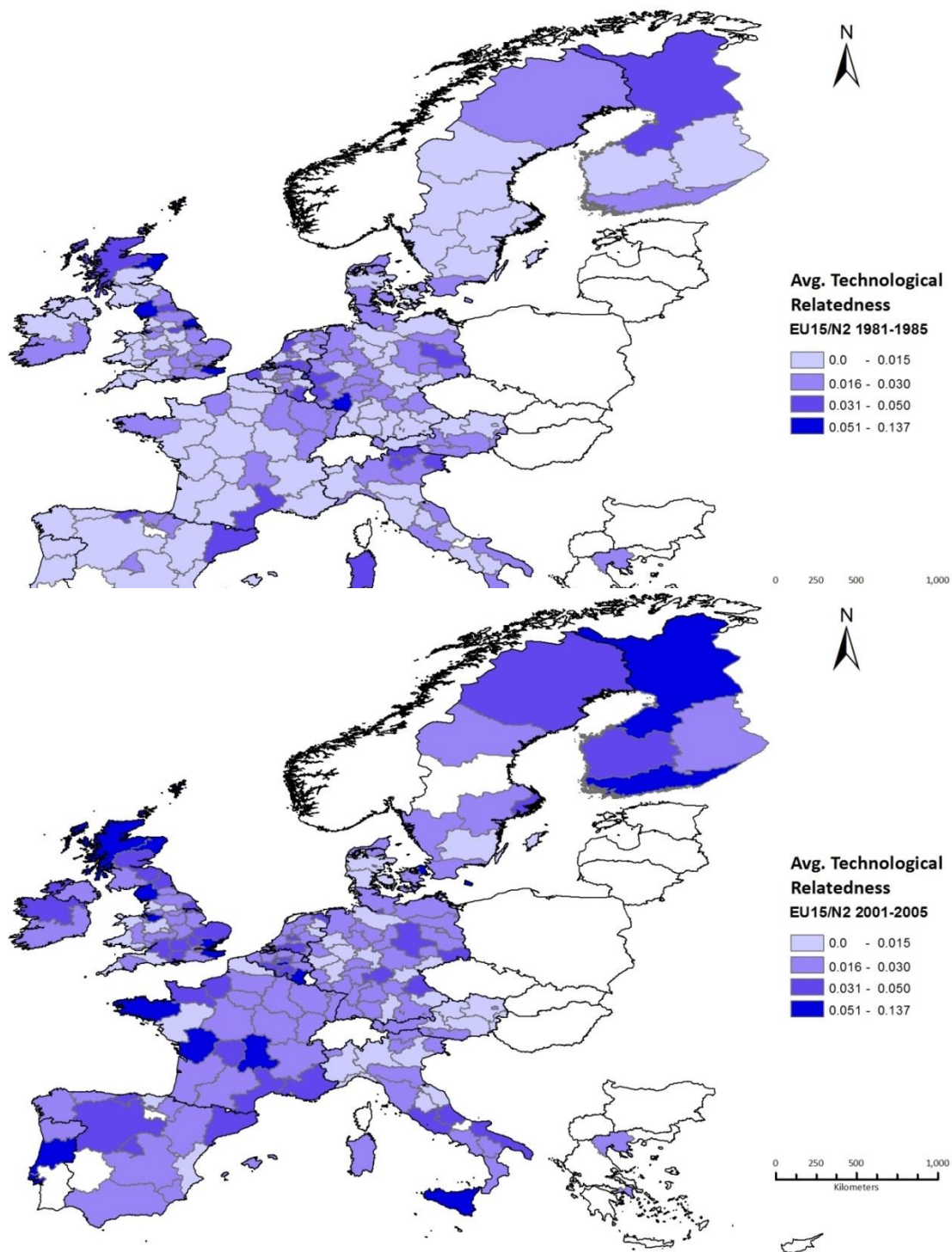
KNOWLEDGE AND EARNINGS - A REGIONAL ECONOMIC ANALYSIS FOR THE GERMAN ECONOMY

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Introduction
Based on the New Economic Geography, studies that place a particular focus on the agglomeration of economic activity primarily focused on the production side and investigated the agglomeration of firms and employment

in industrial or services sectors, respectively. In the recent past, the analysis of the workforce, its quality and attributes was given attention. Studies investigated which types of knowledge and skills are related to the geographical concentration of employment and regional economic vitality in particular in the United States (Gabe 2009, Abel and Gabe 2011, Gabe and Abel 2011). These studies put emphasis on *how* the production is done rather than focusing on the outcome of production. Which type of knowledge is driving economic development is relatively unexplored, though (Gabe 2009, Powell and Snellman 2004). One reason is that finding an adequate measure for knowledge is quite difficult (Howells 2002).

The present contribution investigates first to which extent knowledge and skills are rewarded differently in the German labor market, and second which pattern the geographical distribution of knowledge-workers follows across the German regional economy. The results are important to identify the sources of regional growth in the German economy.

Analysis

Rewards that are due to high knowledge in specific subjects are analyzed by using a Mincerian earnings regression (Mincer 1974), and the geographical concentration of workers in occupations that require high knowledge in different subjects (knowledge-workers) is assessed by Krugman indices (Krugman 1991).

First, an adequate measure for knowledge is derived. Following the methodology of Feser (2003), data measuring the level and importance of knowledge for different occupations was taken from the US Department of Labor's O*NET system. In the O*NET system, knowledge requirements are evaluated for 33 subjects, ranging from Mathematics to Languages, Administration and Management, Telecommunications, Biology, Design and so forth. The occupations in the O*NET system were then matched with occupations in the GSOEP data from the German Institute for Economic Research (DIW). The GSOEP constitutes a representative sample of the German population. 296 different occupations are considered in the variable *Occupation of Individual* in the GSOEP. Given the richness of information in the O*NET system, more than one occupation from the O*NET system was combined with an occupation from the GSOEP in several cases. In doing so, the average value of level and importance of knowledge across the occupations was taken. A knowledge index was calculated by multiplying the level of knowledge score with the importance of knowledge score. High knowledge requirements were defined as covering the occupations that score an index value of at least 60% of the score of the occupation with the highest value of the knowledge index.

A Mincerian earnings regression of the following form was estimated, supplementing the original framework with further individual characteristics and knowledge indicators as was done by Gabe (2009):

$$\ln(earnings)_i = \beta_0 + \beta_{1i}educ_i + \beta_{2i}age_i + \beta_{3i}age_i^2 + \beta_{4i}X_i + \beta_{5i}Z_i + \varepsilon_i.$$

(1)

The dependent variable is the natural logarithm of monthly individual labor earnings, *educ* is a variable indicating whether the individual has received the A-levels or not, *X* is a set of variables capturing individual characteristics (married, immigrant, male, job status), and *age* and the square of *age* are taken to capture effects of labor market experience. *Z* is the vector of high-knowledge indicators. The equation was estimated with a Heckman-selection procedure.

For the investigation of the geographical concentration of knowledge-workers, Krugman concentration indices were computed according to the extended methodology taken by Midelfart-Knarvik et al. (2000):

$$KI_k = \sum_{r=1}^{R} \left| \frac{e_{kr}}{e_k} - \frac{1}{K-1} \sum_{k=1}^{K} \frac{e_{kr}}{e_k} \right| .$$

(2)

k denotes the knowledge area, *e* is employment, and *r* denotes the region. The regional information was obtained for 97 planning regions through a special user contract from the GSOEP data. These regions consist of one or several urban districts and counties and the construction is based on commuter flows. Using shapefiles, the distribution of employment for different knowledge areas was graphically depicted by plotting the values of regional Balassa indices per subject of knowledge. The Balassa index was measured as follows:

$$B_r = \frac{\frac{e_{kr}}{e_r}}{\frac{e_k}{E}} .$$

(3)

The Balassa index captures the relation between the regional and the knowledge area's employment level.

Results

Main results are that knowledge is rewarded differently in the German labor market and knowledge-workers are distributed differently across the German regional economy. Knowledge in specific areas generates a positive wage premium independently from the level of education. The geographical distribution of knowledge-workers reveals that the dissemination of knowledge differs across peers and customers.

Specifically, the analysis shows that high knowledge in sales and marketing, computers and electronics, mathematics, biology and law and government yields a positive wage premium. Knowledge in food production, design, building and construction, chemistry, psychology, sociology and anthropology, geography, foreign language, public safety and security, communication and media, telecommunications and transportation is not rewarded or penalized in the German labor market. Contrasting results from the US (Gabe 2009), the analysis shows that knowledge in clerical tasks, personnel and human resources, mechanical tasks, biology, philosophy and theology generates a positive wage premium, as well. Results further show that workers with high knowledge in communication and media, physics, fine arts, chemistry and geography are strongly concentrated across the German planning regions. Workers with high knowledge in administration and management, for example, are more dispersed across regions and these occupations generate a positive wage premium. This corresponds to the categorization of Gabe and Abel (2011), indicating that the dissemination of knowledge involves people outside the knowledge area and not peers. A moderately high degree of concentration of employment, for example, is present in the case of mechanical tasks. Employment is concentrated in the regions of Schwarzwald-Baar-Heuberg, Donau-Iller, Allgäu, Bodensee, Ostwürtemberg, Osthessen, Arnsberg and Braunschweig. In some of these regions important automobile companies operate like VW in the planning region Braunschweig or the intermediate goods industries for automobile parts in Ostwürtemberg and Arnsberg. Baden-Würtemberg, the very South-Western state in Germany, is well-known for its automobile production which is rooted in the invention of the first automobile with a combustion engine by Carl Benz in 1886 in Mannheim.

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Understanding national trajectories of regionalism through legitimate, political and administrative capital. A comparative case study of the institutional degrees of regionalism and the actors' abilities to create institutional elements, collaborate and coordinate policies in England, Poland and Denmark.

Introduction

Regionalism is an ism referring to "political movements which demand greater control over the affairs of the regional territory by the people residing in that territory" (Keating, 1997:5). Despite the successful influence of this ideology on decision-makers from the European Commission to the national and regional levels (Salone, 2010: 1213), not many attempts have been made in understanding the trajectories of Regionalism. In other words, what drives national, regional and local actors' ability to create institutional elements, cooperate and coordinate policies on regional level to secure or maintain full institutionalisation of Regionalism. This paper addresses two main issues of the literature of regionalism:

1. How do you neutralise national context to compare regionalism between countries?
2. How to understand the expansion and contraction of regionalism?

By analytically comparing three regions across England, Poland, and Denmark, the challenge of comparing the institutional degree of regionalism between regions in various countries, cf. issue 1, is responded through a five stages-institutionalisation model ranging from de-institutionalisation to full institutionalisation. The question of understanding the dynamics of regionalism, cf. issue 2, is answered by analytically comparing the actors of the various regions' abilities to create institutional elements, collaborating and coordinating policies according to legitimate, political and administrative capital.

Regionalism as a power struggle between national, regional and local levels

Due to its open dimension of spatiality (Salone: 2010: 1213), regionalism - as a term - is vague enough for scholars to apply in spite of their field of subject being cityregions (Harrison, 2012 & 2010; Wheeler, 2002), subnational regions (Salone, 2010; Mawson, 2007; Counsell et al 2007; Bond, 2004; John et al, 2002; Tomaney, 2002 & 2000) or supranational regions (Mansfield, 2010; Söderbaum et al, 2005; Hettne et al, 1999). According to Oxford Dictionaries (2015), a region is an area, especially part of a country or the world having definable characteristics but not always fixed boundaries. As such, for decades Regionalism has been an umbrella for various perspectives on regions within the fields of regional planning, regional development and international relations. Paradoxically, the launching of New Regionalism - which can be seen as an attempt to surpass or overcome the ambiguity of regionalism - has only increased the indistinctness of the term. Indeed, regionalism is a contested term (Sagan & Halkier, 2005).

Whether subscribing on "old" or new regionalism what seems to unites the various fields of study is the current role of regions as contested spaces where economic, political and social actors attempt to institutionalise "their" vision of "their" region as the dominant form of territorial governance (Halkier,2008: 2). Likewise, by denoting regions the intrinsic role as crucibles of economic development and prime focus of economic policy (Webb & Collis, 2000: 857), regionalism is a process of institutionalising power on regional level at the expense of local and national levels. This power struggle between competing levels is a matter of giving and taking in a zero-sum power game.

The five stages-institutionalisation model

Peters & Marcussen's (2008) five-stage institutionalisation model elucidates the dynamics of such a power game:

1. De-institutionalisation constitutes a rupture with past practices and ideas. In such a critical juncture, old institutional elements are being delegitimised.
2. Pre-institutionalisation indicates that an ideational vacuum has emerged and new ideas can be aired.
3. Semi-institutionalisation points to institutional innovation implying that a simple foundation for a possible future path may be defined.
4. Institutionalisation represents the process through which a complex structure of institutional elements gradually takes form through bricolage. Multiple routines are being habitualised.
5. Full institutionalisation amounts to an institutional equilibrium in which a sense of settledness and taken-for-grantedness indicates internalisation of institutional elements.

With point of departure in Regionalism as a process of de-institutionalisation and institutionalisation, a definition of regionalism is pursued in the following.

Regionalism defined
A definition of regionalism should effortlessly be available by reviewing the academic literature of regionalism. However, the absence of a definition is salient whatever it is Regionalism (Sagan & Halkier, 2005, John et al, 2002 & Tomaney, 2002), New Regionalism (Bukve, 2005; Söderbaum et al, 2005; Wheeler, 2002; Tomaney et al, 2002; Webb & Collis, 2000 & Hettne, 1999), New Italian Regionalism (Salone, 2010), English Regionalism (Mawson, 2007 & Bond, 2004), City-regionalism (Harrison, 2012 & 2010) or Fragmented Regionalism (Counsell et al, 2007). Rather than defining regionalism, emphasis has been on explaining the emergent movement of regionalism as an [superior] answer to globalization (Cooke & Morgan, 1998).
Nevertheless, in line with Regionalism as a power game between competing levels, Mansfield & Solingen (2010) define Regionalism as a process of institution creation … marked by cooperation and policy coordination. Thus, Regionalism is a process that engages actors (Mansfield & Solingen, 2010: 146-7). Inspired by this definition of Regionalism, this paper applies the following definition:

> Regionalism is a process of institutionalisation on regional level that engages actors to create institutional elements, cooperate and coordinate policies.

The institutional elements, cooperation and policy coordination mutually stipulates the institutional degree of regionalism. Nevertheless, the actors' willingness and engagement - or lack of it - to create institutional elements, cooperate and coordinate policies is driven by the process of institutionalisation on regional level, typically initiated by regional policy entrepreneurs but instigated through legislation on national level (Webb & Collis, 2000: 861).

In the following regionalism is operationalised through the five-stage model of institutionalisation.

Institutional degrees of regionalism
Being defined as a process of institutionalisation, regionalism covers the five stages of the abovementioned institutionalisation-model. Stage 1 deinstitutionalise past practice and ideas and hence makes room for new thoughts. Stage 2 and 3 gives policy entrepreneurs the opportunity of airing solutions on experienced problems and realise ideas. At stage 4, institutional elements are created to institutionalise the chosen idea of the preceding stages. To reach stage 5's full institutionalisation, the institution is internalised through cooperation and coordinating policies between actors.

Analysing the process of institutionalising regionalism
To measure the institutional degree of regionalism, firstly the process of institutionalising regionalism in England, Poland and Denmark are analysed according to the first four institutional degrees of regionalism. The criteria of the fifth and last institutional degree of regionalism is analysed on regional level to assess whether regionalism is fully institutionalised.

Preliminary results of the analyses
England merely managed to reach the institutional degree of institutionalisation before the RDAs was de-legitimised and replaced by the idea of Local Enterprise Partnerships. Hence, England never managed to reach full institutionalisation of regionalism.

Neither has Poland - due to competition between regional governments and RDAs - managed to reach full institutionalisation of regionalism, leaving Denmark and their regional growth forums to have reached full institutionalisation of regionalism.

The full institutionalisation of regionalism in Denmark
Since the 1950'ties and despite of several attempts on local and regional levels to gain influence on regional development, administering regional policy was a national level responsibility (Kristensen, 2011: 160). However, in 1991, the government deinstitutionalised the past practice of national governed regional policy by cancelling the Regional Development Act of 1958 (Folketingstidende). To improve the regional and local levels possibilities for EU-funding, this abolishment of the Regional Development Act was followed up by a Local Government Development Act of 1992 that legalised sub-national development initiatives (Folketingstidende).

Through this ideational vacuum and the subsequent institutional innovations of three partnership-orientated entities, the regional growth forums was institutionalised as part of the Danish Structural Reform. Enacted in 2005 and put into effect in 2007 by amalgamating respectively 275 municipalities and 14 counties to 98 new municipalities and five Regions, the reform replaced the 1992 Local Government Act by the Business Development Act of 2005 in which regional growth forums orchestrate regional development as a statutory partnership-orientated task for the new Regions (Folketingstidende).

In the Danish regional case, the institutional elements of cooperation have been the Open Secretariat, the Dialogue Group, the Recommendation Committee, and the Presidency of Growth Forum. Likewise have the institutional elements of coordination been the 2005 Danish Globalisation Strategy, the Business Development Strategy 2007-10, The 2007 Regional Development Plan, annual partnership agreements between national government and Growth Forum, and partnership agreements between Growth Forum and regional development actors. Combined has these institutional elements of Growth Forum enabled cooperation and policy coordination that has internalised the institution of Growth forum, which corresponds to regionalism being full institutionalised.

Legitimate, administrative and strategic capital
The ability and engagement of the actors to carry out the abovementioned constitutions of regionalism seems to be contingent on the legitimate, political and administrative capital of the region, which appears to explain why some countries institutionalise or de-institutionalise regionalism.

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THE SOURCES OF TERRITORIAL COMPETITIVENESS: THE CASE OF QUERETARO

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Globalization and decentralization are two phenomena that have brought the relevance of territory to the regional development discussion table. Globalization, in particular, has contributed to change market competence criteria and to shape the new economic development discourse (Lengyel, 2009). Indeed, it has strongly influenced the emergence of the regional competitiveness discourse, especially in the realm of public policy design (Wilson, 2008). Due to the popularity that this competitiveness discourse has gained, there has been a shift in terminology from economic development, under the assumption that competitiveness leads to an improvement in quality of life and to social and economic welfare (Gardiner et al, 2004).

Goods, services, capital, people and ideas flow easily between regions due to globalization and even when regions do not compete as companies do in a zero sum game, they indeed have to focus on strengthening the unique, remarkable and hard to replicate competitiveness elements they own in order to create competitive advantages (Rodríguez-Pose y Tijmstra, 2009) and to prevent emigration and decline (Camagni, 2002). It is precisely at the regional level where key competitiveness determinants reside because it is in there where knowledge, culture, social relations and other important intangible competitive advantage drivers intertwine to shape the firms' environment (Storper, 1997). For example, the region facilitates generation and spillovers of socialized knowledge since it is embedded not only in the internal culture of each firm but in the labour market atmosphere (Cellini and Soci, 2002). On the other hand, regional competitiveness draws on firms' spatial concentration, and the region supplies the spatial proximity necessary for clusters to form and foster firms' innovation process (Porter, 1990; Malecki, 2004). Therefore regions are conceived as an endogenous resource that is built and designed to contribute to firms' competitiveness (Navarro, 2007; Berger, 2009). Different regions possess different resources and have different attributes, implying that analysis of the place-specific drivers of competitiveness is an important step in determining the means by which different places can improve their economic performance. In particular, such analysis plays a key role in contributing to the design of public policies and government interventions that can foster regional development. The role of such analysis is widely recognized, for example, in European debates on regional smart specialization strategies (Foray *et* al, 2012; Thissen *et al*, 2013; Valdaliso and Wilson, 2015). Yet it is a complex process given the different potential drivers of territorial competitiveness and the inter-dependencies and contradictions between them.

This research aims to further the understanding of these complexities and of how different sources of territorial competitiveness combine in affecting economic performance. It does so through an applied case study of Queretaro State in Mexico. Located at the central area of the country, Queretaro has a GDP growth rate higher than the national and its capital city is considered at the seventh place in terms of quality of life among 52 cities and 3 metropolitan areas (GCE, 2015). While Queretaro has been ranked among the 5 most competitive states according to the latest competitiveness report of the Mexican Competitiveness Institute (IMCO, 2014), such

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reports do not facilitate a deep understanding of what is driving these outcomes. This case study identifies the sources of Queretaro's competitiveness and classifies them according to how and in which magnitudes they influence the economic performance of the State, enabling an analysis of their relative weight and the inter-relationships between them.

To achieve the main research objectives, the theoretical framework developed for the case analysis draws particularly on Gardiner *et al.'s* (2004) pyramidal regional competitiveness model, which identifies 13 different sources of competitiveness (see figure 1).

Figure 1. The pyramid model of regional competitiveness
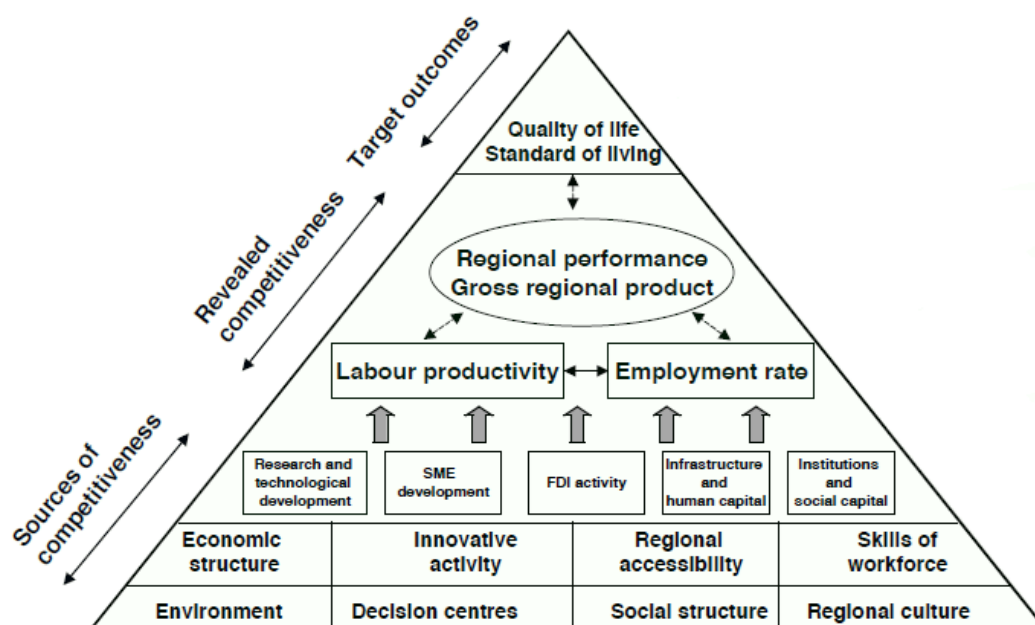
Source: Gardiner et al (2004) p.1048

The empirical work is based on interviews with 10 opinion leaders from the public and private sectors and a self-managed survey which was sent to small, medium and large enterprises with economic activities in Queretaro. Interviews served as the starting point in order to identify, according to leaders' vision and experience, the region-specific sources of competitiveness, which first led to the conclusion that Gardiner *et al.'s* model is broadly appropriate to capture the different sources of Queretaro's competitiveness. Interviews also were useful to learn leaders' opinions about the critical factors that could slow down Queretaro's competitiveness in the short run. One hundred percent of opinion leaders mentioned availability of skilled labor force, innovation culture and number of research centers, and regional quality of life as the top three Queretaro's competitiveness drivers, while lack of urban and industrial infrastructure and public insecurity were mentioned by 100% and 90% of leaders as the principal brakes to the state competitiveness (see table 1).

Table 1. Sources and obstacles to Queretaro's competitiveness

| Queretaro's Competitiveness Drivers	Number of mentions	Obstacles to Queretaro's competitiveness	Number of mentions
Availability of skilled labor force	10	Lack of urban and industrial infrastructure.	10
Innovation culture and number of research centers	10	Public insecurity	9
Regional quality of life	10	Lack of an inclusive plan for the entire state	5
Infrastructure for industry logistics and regional accessibility	9	Political environment and legal framework (corruption, impunity)	4
Geographic location	7	Lack of government strategic plans	3
Constant government focus on competitiveness through the past 12 years	7	Lack of energy and natural resources availability and unsustainability	3
Regional Culture	5	Lack of talented and skilled labor force in high value added areas/brain drain	2
Role of Foreign Direct Investment	4	Lack of sectorial research centers& innovation costs	1
Sustainability and firms' social responsibility	4	Lack of firms vision toward innovation and continuous Improvement quality program	1
Quality of institutions' work	4		
Clusters conformation and diversification of the economic structure	4		
Unions and no/strike agreement	3		
Location of Decision Centers in Queretaro	2		
SME's key role	2		
Energy and natural resources availability	2		

Source: Authors' research

Given that the reference model - as the vast majority of regional competitiveness models do - leaves the interpretation of factors open, each one of them was precisely defined based upon a deep literature review. Once defined, a self-managed questionnaire was designed and sent to 1733 out of 5,032 small, medium and large companies registered in the National Statistic Directory of Economic Units 2014 (DENUE by its name in Spanish) with economic activity in Queretaro and whose email contact information was available. 172 answered questionnaires were collected through the digital platform which remained opened from February 18 to March 6, 2015. Regarding to how and in which magnitude sources of competitiveness influence the economic performance of Queretaro State, questionnaire results provide insights on their relative weight and importance. All were closed questions in the questionnaire and respondents gave their opinion using a Likert scale with 7 magnitudes. Since competitiveness determinants can have positive (for the best) or negative (for the worst) impacts in different magnitude the Likert scale went from "influences very strongly for the best" to "influences very strongly for the worst"[13].

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[13] Likert scale was defined as 1) influences very strongly for the best 2) influences strongly for the best 3) influences moderately for the best 4) no influence 5) influences moderately for the worst 6) influences strongly for the worst 7) influences very strongly for the worst.

From the research outcomes, it is possible to understand the sources of Queretaro's competitiveness and represent them in the framework of Gardiner *et al.'s* pyramidal model (see figure 2).

Figure 2. Relative importance of sources of competitiveness in Queretaro State
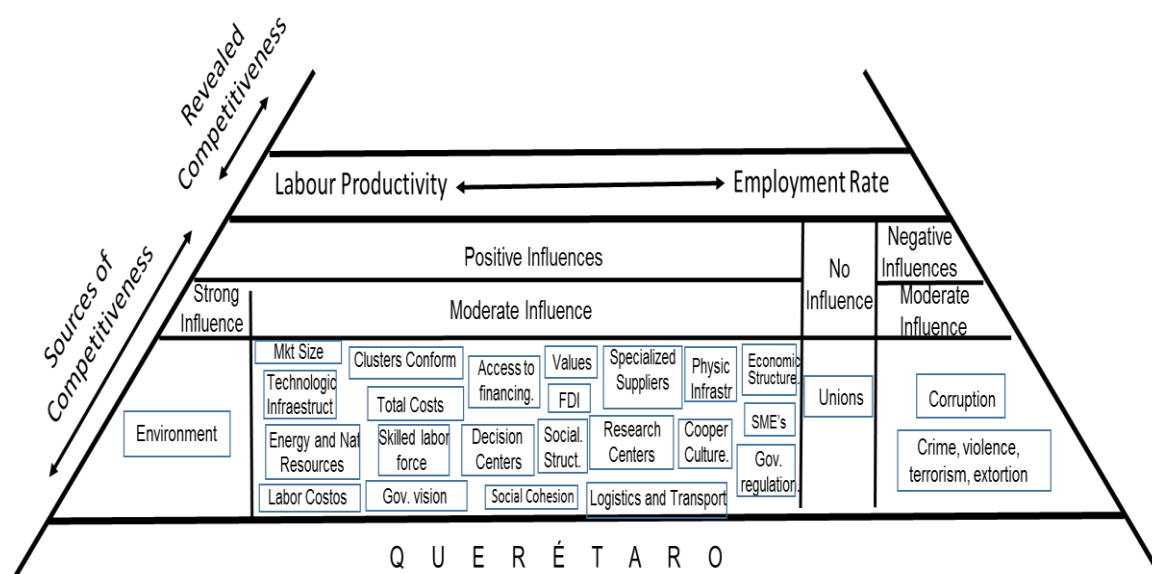
Source: Authors' research

Results are a picture of the different sources of competitiveness in Queretaro according to the point of view of respondents regarding the variables that were used to define each of the 13 competitiveness components. In fact, components are shown broken down to facilitate analysis. Variables like corruption, crime, violence and terrorism are also constituents of the regional business environment, however, due to their importance, they are explicitly shown. Indeed, interviews and survey have helped to pinpoint the attributes that define more precisely the business environment and this is one of the contributions this research makes to competitiveness since factors are not clearly defined in the literature.

The main findings of the study point out to the relevance of the business environment in Queretaro's competitiveness. Defined as all those factors out of the firms' control which facilitates that business can be done (Begg, 1999), this is the only factor that has been identified as having a strong positive impact on companies' competitive performance, while corruption and crime influences are identified as having a moderate negative impact. Therefore, given that sources of competitiveness are inter-dependent and that environment influences some of the other competitiveness drivers, like the attraction of talented human capital and foreign direct investment as well as SME development, it is suggested that public policies focus on strengthening conditions such as public safety, agreeable urban architecture, decent housing, public transportation efficiency and a healthy natural environment, and fighting against corruption, crime and theft to keep on fostering firms' competitiveness. Another finding shows that unions are not perceived to affect competitiveness and the rest of the sources considered have a moderate positive impact. It is suggested that public policies should also be directed to improve infrastructure since this is one of the most crucial components in state competitiveness, both because of the positive role it is playing and because it can provide a brake for other competitiveness-enhancing developments in the short run.

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RUSSIA'S REGIONAL ENDEBTEDNESS

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The steady rise of sub-national debt in Russia since the financial crisis of 2009 has been of considerable concern in the Russian press, sometimes presented as destabilizing, threatening to the national debt level and to governance in Russia. Although expenditures are fairly decentralized, revenues are centralized. As reviewed in Ahrend et al (2013), some studies find that deficits can be lower under revenue centralization, resulting from a reduction of common pool problems in decision-making (Tovmo 2007), expenditure decentralization, too, can help reduce aggregate levels of sub-national borrowing (Baskaran 2010). It is important, however, that partial centralization, especially of revenues, can lead to coordination problems and large regional deficits (de Mello, 2000). This paper contributes to the literature showing the latter problem arising in a vicious circle in Russia.

Increased centralization, mainly of revenues in Russia, accompanied by new social unfunded mandates for regional authorities, has resulted in adversity, worsened for the regions by the recession induced fall in Corporate Income Tax (CIT), the largest component of regional revenue. After the financial crisis of 2008-2009, regional debt grew by more than 100 per cent to reach $78 bln in 2014; external national debt rose from 24.2 to 29.7 per cent over the past five years, while internal debt in fact diminished during the period from 75.3 to

70.3 per cent. To be sure, national debt is modest at 14 per cent of GDP, with some rise in external debt. The central issue, however, is that debt is concentrated in poorer regions and, given revenue rigidity, there are no effective instruments in those regions to reduce it.

The volume of subnational debt substantially rose from 2010 to 2014 with a marked deterioration in its structure (share of commercial credit and short-term length) and risk of default in almost all regions. In 2014, the situation worsened again due to difficulty due to geopolitical and economic conditions. The pressure of budgetary obligations, combined with the weakening revenue base to produce an avalanche of debt in some regions, bringing the need for additional budget loans to crisis levels.

The dynamics of subnational debt in 2014 is depicted in the following Figure 1:
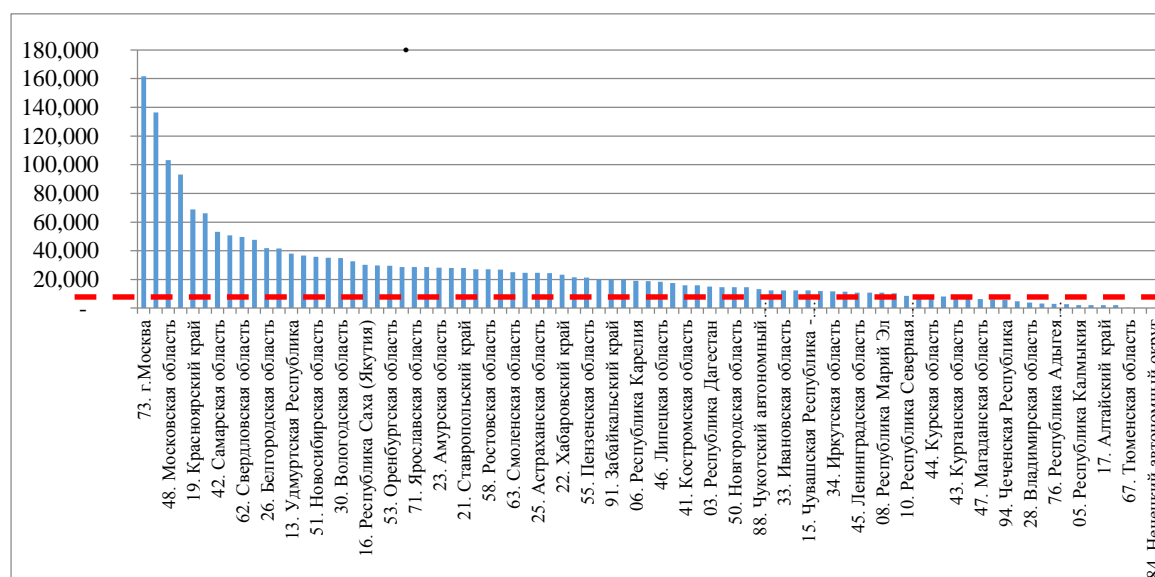

Figure 1: Subnational Government Debt, mlns of rubles, 2014

In general, the level of subnational debt in Russia, some 3.0% of GDP (2.6% at the sub-national and 0.4% at the municipal level), is insignificant at the country level by comparison with OECD countries on average in 2011 11.8% of GDP. However, the ratio to GDP is not an adequate indicator for assessing the sustainability of the regional debt, because it does not reflect the potential of the regional authorities to attract resources, or revenue capacity (Ahrend et al 2013). Given the significant centralization of the revenue base of regional and local authorities, and their dependence on transfers, the key indicator for assessing the sustainability of regional debt is the ratio to its own revenue. This dynamic for 2000-2014 shows nearly one-third of all regions with negative values, which would rate them as "at risk". [14]

The growth of regional debt can be attributed not only to economic slowdown and the collapse of the revenue base, but also to institutional and political factors under the evolving centralized fiscal system. There was a growth in mandated but unfunded social spending, including an increase in salaries of public sector employees by the May 2012 presidential decrees. Regional budgets account for more than half of Russia's consolidated budget social expenditures[15]. Preliminary estimates show the rise in salaries in 2014 to have increased regional expenditures by 7%, and planned rise in 2015 by 10%. The wages share of expenditures by regions on average has increased from 24% in 2012 to 35% in 2015.

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[14] At the end of 2013, those most at risk include the Republic of Mordovia (172%, declining from 179% the previous year: debt increased by 10% and revenue rose by 14.9%). Regions with the greatest debt burden include Chukotka (123%), Belgorod region (110.3%), the Republic of Ingushetia (108%), Vologda (105.3%), the Republic of North Ossetia-Alania (103.2%), and Saratov (102.3%).

[15] Социальные расходы в России: федеральный и региональные бюджеты. Зубаревич Н.В., Горина Н.А. – НИУ ВШЭ, 2015 г.

This is one sign that perhaps even more important than the stagnation of the economy is the inflexibility of revenues: changes in the structure of taxes by the federal government (the introduction of accelerated depreciation and the consolidation of groups of income tax payers) have led to a decline. The consequence of high deficits, therefore, is a fall in the growth of social spending and a decline in spending on housing, communal services and the economy in the Central, Northwestern and Far Eastern Federal Districts, especially in resource abundant regions, experiencing a period of low energy prices. The most significant expenditure reductions are in regions with high levels of debt. This is because they are forced to comply with federal requirements to reduce spending in order to receive further long-term budget loans. Meanwhile, these loans are now critical due to changes in debt structure, their short-term nature and the rise in loans owed to commercial banks. The share of government securities in regional debt at the beginning of 2014 amounted to 26%, the share of budget credits, 27%, with state guarantees a further 7% of total debt of Russian Federation subjects.

Another problem in debt management is governance. The federal government has aimed to improve effective and responsible management of regional and municipal finance in new laws. [16] The federal government has imposed a ceiling on the budget deficit, and where public debt exceeds a certain level, the government will stop regions from borrowing from commercial banks. Some regions, as in Belgorod, have chosen to stabilize social expenditure by reducing spending on the economy, while others, for example, Moscow, favor the economy at the expense of social goods. There are also regions, such as Moldova, which spend the entire allowed amount by organizing a celebration of the 1,000th anniversary of the unification of the Mordovian and Russian peoples, including sports and other communal facilities. The effectiveness of debt management remains an elusive goal.

This ceiling imposes a kind of crisis management. Those regions with a deficit of more than 50% of own revenues and a large share of bank loans can expect a bail-out. Although such a solution addresses fiscal stress, it does not provide effective incentives. Regional authorities that exercise fiscal discipline will find the results that the region's economy is put at risk and, meanwhile, financial assistance from the center will be unavailable. The common problem of fiscal illusion can occur where there is excessive provision of public goods without welfare improvement.

Imposing a ceiling without revenue flexibility leads to a softening of the budget constraint and consumption behavior by regional authorities. The vicious circle in asymmetric federations is as follows: the expectation of a bail-out is a disincentive to effective debt management. At the same time, federal authorities can scarcely deny emergency requests especially from regions whose size and economic significance could place the country itself in financial difficulty.

The Russian government has taken steps to resolve this problem. Regions are being given the opportunity to reduce their state debt while not defaulting on commitments. The government declared that since 60% of regional debt is commercial, such loans are being replaced by budget credit, with the result in a fall of regional debt from commercial loans and securities by almost 10%. It also put a ceiling on the deficit not to exceed 10% of revenues (excluding grants). Regions with a lower deficit will not have to refinance commercial loans.

To address one problem, the government has thus introduced another. Regional authorities have little flexibility in revenue sources, and when forced over the ceiling, they will have the incentive to shift responsibility for their solvency to federal authorities. This, in turn, drains resources from the federal budget without resolving the problem of sub-national debt.

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[16] Утверждена постановлением Правительства Российской Федерации от 15 апреля 2014 г. № 310

COMMUNITY-LED LOCAL DEVELOPMENT IN RECREATIONAL COASTAL PERIPHERIES

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Coastal regions have always attracted people for a variety of reasons ranging from subsistence to recreation. The relatively high proportion of second homes in rural communities and municipalities has a significant impact on the local population level. The increasing seasonal population also brings changes in host communities such as increased demand for local services and infrastructure. Early on, the seasonal population needs to engage in dialogue with local action groups to make sure that their needs and concerns are known and taken into account when designing local strategies and programmes.

Peripherality can also be a highly relative phenomenon (Garrod and Wilson 2002). Concept of peripherality becomes more dynamic, with the increased spatial fragmentation and socio-economic differences. Peripheral coastal region is characterized by the permanent population migration to cities, but the other hand population is growing influx of summer residents. Second-home owners, there are contexts in which they merit relatively clear delineation from the rural population, such as when considering politically the most appropriate way to tax them or subject them to planning regulations (Halfacree 2012). Places will often try to change their relative accessibility via development of new transport and communication infrastructure and networks as well as incentives to use such networks. However, there are a range of innovative responses to peripherality that operate at different scales according to different policy measures and the nature of the policy environment within which peripheral regions are located (Hall et al. 2013; Pechlaner and Tschurtschenthaler 2003).
Considerations of the impacts of second home, vacation cottage or holiday/ recreational home ownership and use in rural areas, around the world, regularly align with a "loss of community" thesis, with second homes linked to a range of negative socio-economic consequences (Gallent 2014). Second homes give communities a potential store of "bridging" social capital (Putnam 2000), enabling them to "get ahead" (ibid.) on a social and, by implication, an economic front. It proposes that second homes have a clear social value within rural community structures, which has been overlooked, and aims to open a research agenda and debate around the measurement and likely extent of this value (Gallent 2014).

99.99% of Estonian rural area is covered by LEADER Local Action Groups, LAGs (Ministry of Rural Affars 2014a). There are 26 LEADER local action groups in Estonia, also 22 LAGs are located in the coastal region, the total number of inhabitants in coastal municipalities is 172 000 and the area is 13 000 km². The aims of the Leader measure are to promote local initiatives, to contribute to the enhanced competitiveness of agriculture and forestry, to improve the quality of life in rural areas, to diversify economic activities and to empower the local level through Leader Local Action Groups.

The paper focuses on coastal populations' perspectives, seasonal/ summer communities' participation in activities of local action groups (LEADER groups), also design of local services and infrastructure. Community-led local development is area-based and is an ideal methodology for building linkages between interested population groups (European Commision 2014). Managing authorities will need to engage in capacity-building activities to ensure that local communities, especially those in coastal areas with seasonal populations, are able to fully participate. This can be achieved by building local action groups and formulating viable strategies (European Commision 2013).

The objective of the paper is to analyze seasonal population participation in the local decision-making process to build community capacity and stimulate social innovation and entrepreneurship. The main research question is participation of summer inhabitants drawing up of the local development strategies. The study brings forward the connections between the different participants and their interests in drawing up of the local development strategies, to focus community-led local development and also seasonality the local economy and services through case studies in Estonian coastal peripheries. These case studies demonstrate how summer inhabitants have been connected by local and regional planning and local economic and networks. Using a previous case studies (Gallent 2015), could be argued seasonal residents use the resources of their extended social networks to shape and influence local agendas (around planning, housing, services etc.) and to assist community development.

The data collection was conducted through semi-structured key informant interviews and analysing LEADER strategies. The selection of interview targets lies heavily on the local knowledge, but was also limited by the availability and willingness of the interviewees. They can be roughly divided into four groups: local action group leaders, municipal planning authorities, second home owners, local community leaders, permanent residents.

It is vitally important to make the local people and seasonal inhabitants get engaged in local activities and form a perfectly acting community both in practical and cultural projects, like establishing infrastructure to improve the quality of life or organize cultural events.

Founding new residential areas next to the areas of historic settlements has given the newcomers an opportunity to integrate with the existent community. Spatially secluded second home areas lack network governance with the purpose to develop a better environment, they try to stick to "status quo". These areas and second home owners co-operate only with the view to avoid new developments and constructions and preserve the existent status, which may also led to temporary networks, supported by social media apps. A motivating factor to this might be developing infrastructure and local services in the area of second homes. Maintaining the infrastructure is possible only in a mutual cooperation with a local community. This could be the best way to obtain funding the projects, like the LEADER program, which demands an organization of third sector based on local community work. Raising the quality of life in the area will benefit to quality of life of both inhabitants groups and also raise the prices of real estate properties which will be more valued and maintained. The involvement activities have been sufficiently wide-scale and the authorities responsible for the programming have allowed important stakeholders to express their opinions (Ministry of Rural Affars 2014b). Agreements on developing and using local premises are to be made, alongside with the planning documents to be fixed. At present the LEADER measure in Estonia is implemented within the framework of the Estonian Rural Development Plan 2014-2020. The new strategies were developed during the period of 2014–2015, which were led by local action groups. It should be described in more detail and analysed how important the contribution of the Leader approach and the action groups has been in directing the local development (participation in planning the spatial development and investments) and the availability of what local services the Leader approach has contributed into (Ministry of Rural Affars 2014b). Managing authorities will need to engage in capacity development to ensure that local communities, especially those in coastal areas with seasonal populations, are able to fully participate.

IT based technologies enable to get a quick and detailed feedback for the issues arising in process of planning. Another way to get involved second home owners who live elsewhere is using social media. The case studies presented, that local government has been planned applying social media rather conservatively. The argument of the local government is that social media is flexible and easily accessible, but it lacks a balanced and analyzing function. This decision has to be made by the local government which should take into consideration an analyses made by experts and specialists. However, social media provides a quick and efficient means to encourage peripheral second home owners or local people who work abroad in the process of decision making.

Based on the additional information gathered, the interviews conducted and the analysing LEADER strategies, can be said that summer residents were partially involved in the drawing up of strategies. Seasonal population participation in the local decision-making process in rural coastal peripheries is vitally important for community-led local development in recreational coastal peripheries.

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ASSESSING THE IMPACT OF NATURAL CAPITAL ON THE RISK OF DEPLETING UK WEALTH

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Introduction

A fundamental interest in the UK development strategy is to determine whether or not patterns of economic growth are sustainable (HM Government, 2011). When assessing sustainability, measuring wealth rather than income provides a more comprehensive approach because it not only allows for the capture of present well-being but also the well-being inherited by future generations (Stiglitz et al., 2009). The value of UK wealth is the result of the aggregation of the value of different assets found in the UK economy. This includes financial assets (i.e. gold reserves, currency and deposits, debt securities, loans and other financial receivables); produced assets (i.e. fixed assets, dwellings, buildings and structures, machinery and equipment, transport equipment, etc.); human capital (mainly given by labour income and life expectancy); and natural assets (i.e. minerals, oil and gas reserves, coal reserves, timber resources, agricultural land, fishery, water supply, and the ecosystem services of outdoor recreation and greenhouse gas sequestration). In its estimation of wealth, national accounts in the UK have traditionally considered only financial and produced capital, and neglected the contributions of other capital forms. However, in recent years significant research has been carried out to estimate the values of UK natural and human capital, and to incorporate these values into the measurement of wealth (UKNEA, 2014; ONS, 2012; NEWP, 2011).

In this work we study the composition of overall UK wealth during the period 2003-2013 when the values of natural and human capital are taken into account. We aim to investigate the importance of including natural capital in the estimation of wealth by assessing the impact of this capital form on the risk of depleting UK comprehensive wealth. We develop a stochastic model of UK wealth that estimates the value of the stock of financial, produced, natural, and human capital in the UK by following the methodologies introduced by Dey-Chowdhury (2008), Khan et al. (2014) and Fender (2012), respectively. In addition, our model considers assets as a system rather than as individual units, thereby capturing some of the most significant interactions among assets to form a web of relationships based on empirical data.

Analysis of UK wealth

A nation's comprehensive wealth, as defined by Arrow et al. (2012; 2013), consists of the aggregation of the social worth of an economy's entire stock of capital assets formally expressed as

$$W(t) = \sum_i [p_i(t) \, K_i(t)],$$

(1)

where $K_i(t)$ is the economy's stock of asset i at t and $p_i(t)$ its shadow price. When measuring wealth, sustainability can be demonstrated by showing that comprehensive wealth is maintained through time. This idea is captured in the concept of intergenerational well-being, *V(t)*, expressed as

$$\Delta V(t) = \Delta W(t) = \sum_i [p_i(t) \, \Delta K_i(t)],$$

(2)

which implies that materialising sustainable development requires that intergenerational well-being per capita does not decline in time.

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When examining the composition of the UK wealth in its different capital forms, we found that the financial capital has traditionally been the main contributor of wealth. Table 1 illustrates how the measured wealth in this country is distributed across its different capital forms for the years 2003, 2008 and 2013. Three interesting observations are highlighted from figures in this table. Firstly, it is evident that out of the four types of capital comprising UK national wealth, financial capital is by far the largest, accounting for 51.2% of total wealth in 2013. The second observation is that financial capital also shows the largest variations in value (128.8% growth in 2003-08, and 18.7% decline in 2008-13), compared with a 16.9% growth in 2003-08 and 6.6% decline in 2008-13 of human capital; a 13.6% growth in 2003-08 and a 2.3% decline in 2008-13 of produced capital; and a 10.9% decline in 2003-08 and 16.6% decline in 2008-13 of natural capital. The final observation is that the value of natural capital is the smallest among all capital forms, accounting for only 2.3% of the wealth in 2013. Moreover, it is the only type of capital that has shown continuous decline over the whole 10-year period from 2003 to 2013.

Table 1: Wealth in the UK 2003-2013 (2014 real prices)

	2003		2008			2013		
	Stock (£ bn)	Fraction of wealth (%)	Stock (£ bn)	Fraction of wealth (%)	Change (2003-2008) (%)	Stock (£ bn)	Fraction of wealth (%)	Change (2008-2013) (%)
Financial assets								
Monetary gold and special drawing rights	3.4	0.0	7.5	0.0	116.9	16.6	0.0	121.5
Currency and deposits	4,633.9	11.1	7,560.4	11.5	63.2	6,534.8	11.5	-13.6
Debt securities	1,914.9	4.6	2,899.2	4.4	51.4	3,468.0	6.1	19.6
Loans	3,208.6	7.7	5,904.1	9.0	84.0	4,273.8	7.5	-27.6
Equity and investment fund shares/units	3,471.2	8.3	4,002.5	6.1	15.3	4,785.8	8.4	19.6
Insurance, pension and standardised guarantee schemes	2,069.7	5.0	3,705.0	5.7	79.0	4,089.8	7.2	10.4
Financial derivatives and employee stock options	-	-	11,448.1	17.5	-	5,621.0	9.9	-50.9
Other accounts receivable/payable	422.8	1.0	444.9	0.7	5.2	442.1	0.8	-0.6
Total financial capital	**15,724.0**	**37.7**	**35,972.0**	**54.9**	**128.8**	**29,232.0**	**51.2**	**-18.7**
Produced assets								
Fixed assets	-	-	7,576.3	11.6	-	7,747.8	13.6	2.3
Dwellings	4,045.7	9.7	4,669.9	7.1	15.4	4,735.0	8.3	1.4
Other buildings and structures	-	-	1,641.3	2.5	-	1,769.8	3.1	7.8
Buildings and other dwellings	809.7	1.9	710.1	1.1	-12.3	839.2	1.5	18.2
Other structures	767.9	1.8	931.2	1.4	21.3	930.6	1.6	-0.1
Machinery, equipment and weapon systems	-	-	872.0	1.3	-	828.6	1.5	-5.0
Transport equipment	109.6	0.3	215.0	0.3	96.2	202.9	0.4	-5.6
ICT equipment	-	-	27.7	0.0	-	29.1	0.1	5.3
Other machinery, equipment and weapon systems	550.8	1.3	629.3	1.0	14.2	596.5	1.0	-5.2
Cultivated biological resources	72.5	0.2	187.6	0.3	158.8	222.9	0.4	18.8
Intellectual property products	-	-	205.5	0.3	-	191.6	0.3	-6.8
Inventories	244.8	0.6	291.7	0.4	19.2	273.8	0.5	-6.1
Total produced capital	**7,119.9**	**17.1**	**8,091.2**	**12.3**	**13.6**	**7,903.5**	**13.9**	**-2.3**
Natural assets								
Minerals	20.5	0.0	20.6	0.0	0.9	20.9	0.0	1.4
Coal reserves	15.2	0.0	16.1	0.0	5.8	12.5	0.0	-22.5
Oil & Gas reserves	299.9	0.7	166.1	0.3	-44.6	71.0	0.1	-57.3
Timber resources	4.6	0.0	5.9	0.0	27.4	9.9	0.0	69.7
Agricultural land	38.3	0.1	34.4	0.1	-10.2	28.2	0.0	-18.2
Outdoor recreation	1,740.8	4.2	1,642.6	2.5	-5.6	1,430.4	2.5	-12.9
Water supply	6.1	0.0	2.7	0.0	-55.4	-	-	-
Fishery	4.4	0.0	4.8	0.0	7.7	5.2	0.0	9.0
GHG sequestration	5.5	0.0	8.6	0.0	54.8	13.2	0.0	53.9
Total natural capital	**2,135.4**	**5.1**	**1,901.8**	**2.9**	**-10.9**	**1,586.7**	**2.8**	**-16.6**
Human capital	**16,777.0**	**40.2**	**19,605.0**	**29.9**	**16.9**	**18,309.0**	**32.1**	**-6.6**
UK wealth	**41,757.0**	**100.0**	**65,575.0**	**100.0**	**57.0**	**57,047.0**	**100.0**	**-13.0**

We can observe that the high dependency on financial assets increases the risk exposure of UK wealth to the imbalances generated by a financial crisis. The downturn due to the 2008 crisis severely affected the stock of financial assets in particular by reducing the value of loans and stock options and slowing the growth of currency, deposits and other receivables. As a result, UK comprehensive wealth passed from experiencing a steady growth of 9.5% per year before 2008 (increasing from £41.76tn in 2003 to approximately £65.58tn in 2008, 2014 real terms) to a 13.0% decline in value between 2008 and 2013. On the contrary, the effect of the crisis on the stock of natural capital was much less severe. Before the crisis, natural capital value was already decreasing at an average rate of 2.3% per year; this trend remained little changed during the years after the crisis, registering an annual fall of 3.6%. It is noteworthy that the reduction of natural capital value has not been driven by this specific

financial crisis, but rather by the progressive depletion of natural assets over time. In particular, the value of non-renewable assets has been decreasing significantly as a result of declining oil and gas reserves.

The resilience to the crisis shown by natural assets in comparison with other asset forms suggests that a greater stock of natural assets in the UK could have contributed strongly to its national wealth. In the next section, we analyse the influence of natural capital on the overall UK wealth.

Natural capital and the risk of wealth declination

The effect of natural capital on the resilience of UK wealth against the crisis imbalance is evaluated using our probabilistic model. We conduct a risk analysis based on Monte Carlo simulations to estimate the probability of UK wealth per capita declining during the period 2007-2012. Three different scenarios are examined based on different trajectories followed by natural capital while maintaining the other capital forms unchanged. In the first scenario, we represent the actual conditions experienced by the different assets compounding wealth during the period in question. In this scenario the value of natural capital decreases at an average rate of 3.6% per year. In the second scenario we test the conditions under which the value per capita of natural capital is maintained as constant (i.e. 0% growth per year), thus representing the minimum criteria for the sustainable management of natural resources. Finally, in the third scenario we test the optimistic view of natural capital increasing at a rate of 3.6% per annum.

Figure 1 shows the probability distribution functions and the cumulative distribution functions obtained for the risk in the three scenarios studied. The risk analysis shows that the probability of per capita wealth decreasing under the conditions of the first scenario is 97.5%, with a mean fall of £35,979 in the value of the wealth per capita. When assuming the natural capital was maintained constant, the estimated risk was reduced to 94.4% (3.1% less than scenario 1) with a mean fall of £29,649 in the wealth per capita. And when the value of natural capital was assumed to recover, the risk was lower even further to 89.3% (8.2% less than scenario 1) registering a mean fall in wealth per person of £28,632 in the same period.

Our results show that increasing the value of natural capital stock can decrease the risk of depleting UK national wealth in the event of a financial crisis. Although a modest growth in natural capital's value is not enough to completely offset the risk of declining wealth, this can still introduce resilience into wealth growth. Therefore, recovering the value of natural capital becomes important in the rebalancing of the composition of UK comprehensive wealth and as a contributor to a sustainable pathway in the event of a financial crisis.
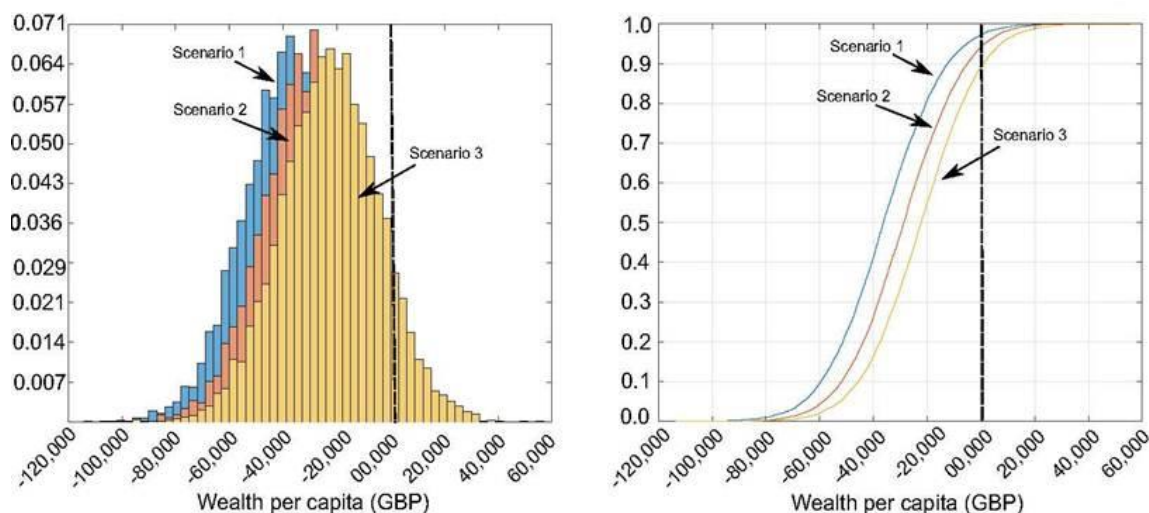
Figure 1: Risk of declining wealth per capita during the period 2007-2013

Conclusions

In the present study our findings indicate that the composition of UK comprehensive wealth during the period 2003-2013 was primarily comprised of financial capital stock. Such over-emphasis on the value of financial capital stock has made UK national wealth vulnerable as a whole to the risk of depletion during the global financial crisis of 2008. As a consequence of the downturn, other sustainable UK economic assets were also at risk of depletion. Within this context, recovering and enhancing the value of natural capital therefore becomes highly relevant to the rebalancing of the wealth composition in the UK as well as towards building resilience

against future financial shocks. In order to preserve UK wealth growth along a sustained pathway, it will be necessary for significant steps to be taken to prevent further declines in UK natural capital. In order for the UK to regain its footing on a sustainable economic pathway, it will be necessary to recover the value of UK natural capital and rebalance overall wealth. Our findings suggest that by maintaining and recovering the value of natural capital, the risk of depleting wealth and moving away from sustained growth can be reduced.

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CONCEPTUALISING THE VALUE OF URBAN INFRASTRUCTURE SERVICES

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Introduction

The role of infrastructure in supporting urban growth is rarely contested, however investment in the optimal level and types of infrastructure is a challenge, and not simply a matter of 'more is better'. This paper examines how the value of infrastructure is conceptualised in metropolitan plans, to evaluate the perceived value, and how high-level planning could support better decision-making. Metropolitan plans are developed as a 'strategic plan for managing change in urban regions' (Gleeson, Darbas, Johnson, & Lawson, 2004), and are important to guide urban development and address to the needs of current and future residents. Infrastructure expansion is crucial to support anticipated growth, as the services provided underpin the daily lives of all urban residents.

This comparative analysis of Auckland, Melbourne and Vancouver assesses how each city conceptualises the role of infrastructure in supporting and shaping change. Cities were selected to be similar in age, growth rate, demographics and per-capita economic performance. They also feature regularly near the top of global liveability indices. While the indices are not particularly scientific measures of quality (RIMU, 2012), they may be treated as an indicator of a city's current service quality, and a likely influence on their future goals.

Data

Primary sources for the three cities are evaluated:
- Auckland Plan (Auckland Council, 2012), Draft 30 Year Infrastructure Strategy (Auckland Council, 2015)
- Metro Vancouver 2040: Shaping Our Future (Metro Vancouver, 2011), Transport 2040 (Vancouver City Council, 2012)
- Plan Melbourne (Victoria State Government, 2014), Northern Horizons – 50 Year Infrastructure Strategy

(NORTH Link, 2014)

Evaluation

Documents were evaluated to understand how infrastructure was framed, and strategic goals were categorised by social, economic, and environmental imperatives, as illustrated in Figure 1,2 and 3.

Figure 3 - Vancouver 2040: Strategic goals

MELBOURNE

SOCIAL

ENVIRONMENTAL

ECONOMIC

Housing choice and affordability

Delivering jobs and investment

Prioritise land use to benefit the community and economy

A more connected Melbourne

Liveable communities and neighbourhoods

Implementation: Delivering better governance

Develop transit as a fundamental economic and social infrastructure

Plan for energy, water, food security through regional self-sufficiency

A state of cities

Environment and water

Invest in flexible, adaptable infrastructure

Pro-active maintenance, maximise use of existing infrastructure

Figure 4 - Plan Melbourne and Northern Horizons: Strategic goals

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AUCKLAND

SOCIAL

Protect and conserve Auckland's historic heritage for the benefit and enjoyment of present and future generations

Integrate arts and culture into our everyday lives

House all Aucklanders in secure, healthy homes they can afford

Create a strong, inclusive and equitable society that ensures opportunity for all Aucklanders

Enable Maori aspirations through recognition of the Te Tiriti o Waitangi / The Treaty of Waitangi and Customary Rights

Promote individual and community wellbeing through participation and excellence in recreation and sport

Create a stunning city centre, with well-connected quality towns, villages and neighbouhoods

ENVIRONMENTAL

Contribute to tackling climate change and increasing energy resilience

Plan, deliver and maintain quality infrastructure to make Auckland liveable and resilient

Create better connections and accessibility within Auckland, across New Zealand and to the world

Acknowledge that nature and people are inseparable

ECONOMIC

Keep rural Auckland productive, protected and environmentally sound

Develop an economy that delivers opportunity and prosperity for all Aucklanders and New Zealand

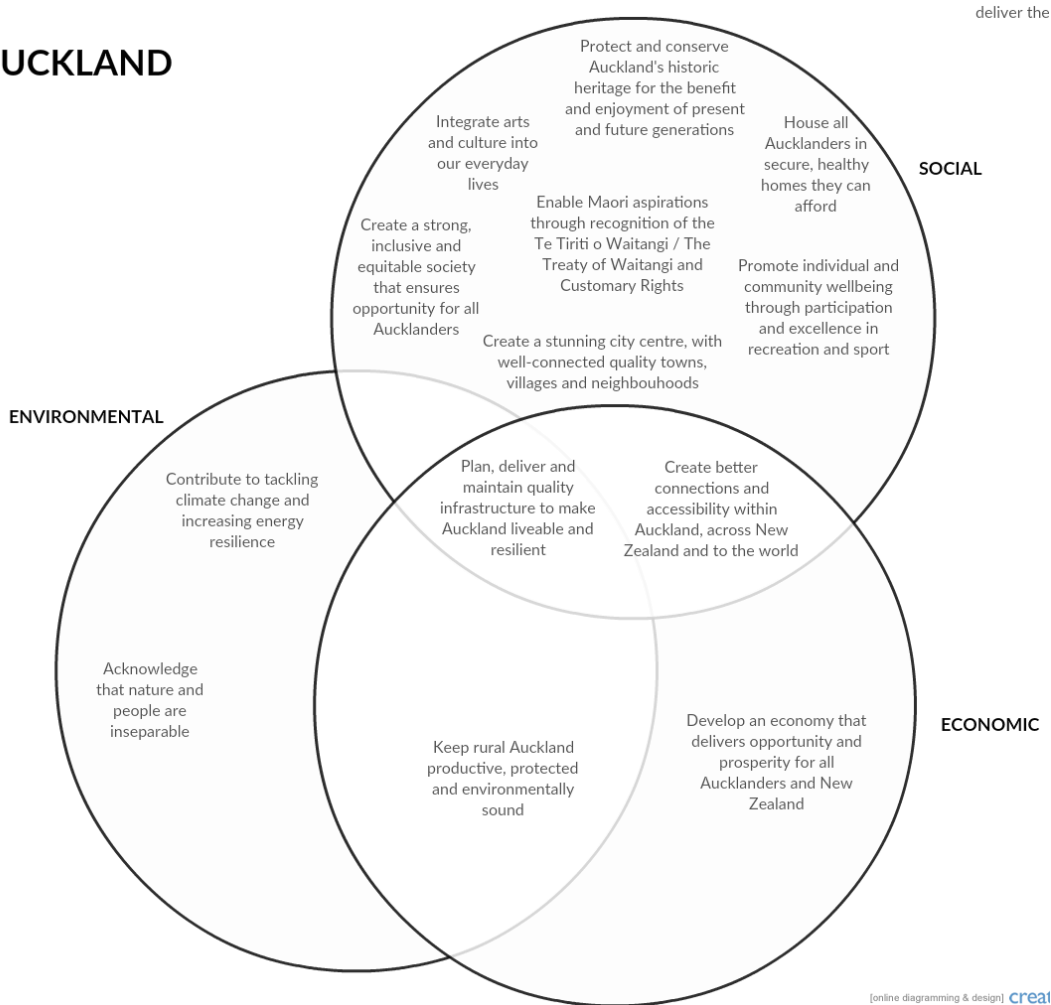[online diagramming & design] creat

Figure 5 - Auckland Plan: Strategic Goals

General themes emerge across all three cities, including strong imperatives for environmental sustainability and addressing climate change issues, availability of housing and transportation for residents, and ensuring that land can be developed for productive use without excessive delay.

All three cities referred directly to infrastructure in their high-level strategy. The Auckland Plan sets the target to 'plan, deliver, and maintain quality infrastructure to make Auckland liveable and resilient', Melbourne to 'invest in flexible, adaptable infrastructure', and Vancouver to shift transport infrastructure provision to transit modes and 'support sustainable transportation choices', as well as 'maintain and replace aging infrastructure'. Local history and geography also provided unique strategic directions.

Auckland's vision directly acknowledged the importance of international transport links, and the value of supporting the aspirations of indigenous Māori communities. The legacy impacts and ongoing lock-in effects of existing infrastructure in each city also shaped the value of future infrastructure investment. All cities aimed to leverage the efficiency and performance of legacy infrastructure, maintaining and renewing aging networks.

Conceptualisation of the value of infrastructure

Melbourne Northern Horizons report provided an explicit definition of the value of infrastructure, as an 'integrated, efficient and well-planned network of built assets, business and community services that supports current and future development growth and drivers a more diverse, competitive and sustainable region bringing long term social, economic, and environmental benefits'. The value integrates the region's goals – a diverse, competitive and sustainable economy, and the realisation of 'triple bottom line' benefits.

One differentiating factor was the broad view of infrastructure to include the business and community services alongside technical systems and physical assets.

The following impacts were defined:
- Transformative: Projects that generate a 'step change in economic, social and environmental performance of the region'
- Opportunity: Projects that leverage existing regional strengths, or act as an enabler to improve the social, economic and environmental performance of the region
- Address existing infrastructure gap: Projects that address an immediate infrastructure capacity constraint or 'gap'
- Future-proofing: Projects are required to address an emerging infrastructure 'gap' over the medium to long term

Summary of the value derived from infrastructure

• Supporting growth, liveability, economic vitality	• Build human capital endowment of cities
• Access to amenities, services, healthcare and education, and employment opportunities	• Conversion of resources, ie. Waste to energy technology, whole-of-water-cycle management
• 'Transformative' and 'city-shaping' impacts	• Facilitate export activities
• Facilitating and incentivizing private investment	• Regional competitiveness, reputation
• Employment growth	• Supporting sustainability goals and reducing emissions
• Increasing land-use efficiency, economic and social productivity potential	• Improved air quality
• Creates conditions for integration and specialization to support productivity growth	• Efficient markets: improved access to sources, end uses, neighbouring cities

Vancouver

Summary of the value derived from infrastructure

• Supporting the region's economic functions	• Supporting efficient freight movement through ports and rail networks
• Supporting public health	• Safe and comfortable travel
• Protecting natural assets	• Supporting the region's competitive advantage
• Providing transport, water, drainage	Driving job creation and economic growth
• Encouraging land use development	
• Building liveable communities (active transport infrastructure)	

Auckland

Summary of the value derived from infrastructure

- Structures that enable life
- Liveability, resilience
  Efficient freight movements, export facilities
- In combination with land use planning, to create compact neighbourhoods
- Unlocks greenfield sites for development or facilitate greater housing density
- Stimulate growth through bulk infrastructure construction
- Develop Auckland as an international gateway and destination area
- Facilitate business growth
- Heritage infrastructure is valued for place making
- Social infrastructure fundamental to well-being
- International competitiveness

- Attracting investment
- Increasing resilience to climate change, natural hazards
- Social cohesion
- Access to jobs, education, community and recreational facilities
- Opportunities for children, young people
- Investment opportunities for Maori
- Papakaianga (Maori approach to building communities rather than houses)
- Community participation, spirit and resilience

Discussion and conclusions

The conceptualised value of infrastructure differed across cities. Melbourne's strategy explicitly defined what infrastructure comprised, and the value derived from infrastructure systems. Categorising the impacts on growth and development captured the differing drivers for investment; supporting growth of new areas, enhancing the accessibility and amenity for developed areas, and 'future proofing' to ensure resilience to climate change and future risks. Auckland re-iterated these concepts, and while the impacts of infrastructure were not differentiated, the role of 'unlocking land' for development and supporting higher densities in existing areas was emphasised. Vancouver's plan outlined the broad future goals, but did not specify infrastructure's role. Defined guidance on nature and role of infrastructure is useful to ensure the goals can be achieved. Ambiguity or poorly-specified strategies in this area could enable scenarios where infrastructure providers continue with a 'business as usual' approach, in the absence of clear direction on how infrastructure provision needs to adapt to support the future vision for the city. Three findings emerged from this study to guide and advise infrastructure planning and provision to better support the over-arching goals for each region; operationalising the social value of infrastructure, re-defining infrastructure to include non-technical and natural systems that support the provision of infrastructure services, and consideration of setting level of service standards to better link the provision of infrastructure with strategic goals.

Operationalising the value of infrastructure for liveability

The liveability and social value of infrastructure, alongside economic and environmental value, was a consistent theme throughout the policy documents, however the role of infrastructure provision to support this was not well articulated. Understanding how the social and liveability goals could be supported by infrastructure provision requires consideration of the nature of the outcomes. As articulated by Ley (1996), 'the category of urban liveability was polyvocal; for the middle class it implied a more healthy environment and attention to culture and the arts; for the inner-city it carried a more rudimentary sense of social justice in such areas as jobs, housing and public services'. Therefore, the need for infrastructure provision, and value generated, may vary according to the level of social need. Differentiating services to optimize benefits could better achieve liveability goals, and the interplay between people and the built environment is crucial to underpin both economic and social benefits (Watson, et al., 2015).

Including non-technical and natural systems as part of infrastructure

The North Melbourne infrastructure strategy included non-technical systems of knowledge governance, and ecosystems alongside technical infrastructural networks. This approach is valuable to underline the importance of the interdependence between technical and organization systems that provide infrastructure services. By directly address how capabilities are developed and maintained, infrastructure providers are better equipped to deliver the required services to support growth and other strategic goals. In addition to the knowledge systems, ecosystem services are crucial to manage the resource flows within cities, however they must be treated as natural capital assets to be maintained and invested in, alongside technical systems.

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CONTRIBUTION TO REGIONAL DISPARITIES MEASUREMENT: EVIDENCE OF COMPOSITE WEIGHTED AGGREGATE INDEX BASED ON EU COHESION CONCEPT

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1 Introduction

Disparities in the frame of regional development are a major obstacle to the balanced and harmonious development of the regions, but also of the whole territory. Analysis of disparities brings the important information about the key problematic issues in region (and thus in country) on the one side and its development potential on the other side. The *aim of the summary paper* is a verification of composite indices approach through evaluation of economic, social and territorial disparities of the Visegrad Four (V4) countries that reflect the level of socioeconomic development and cohesion in evaluated regions in reference period 2000–2012. The summary article determinates and computes three synthetic weighted sub-indices of economic, social and territorial disparities. The hypothesis of the paper is based on the generally accepted concept stated by Molle (2007) that regions with the lower level of regional disparities achieve the higher level of cohesion in the territory that provide better conditions and assumptions for socioeconomic development potential, and vice versa.

There are different approaches to definition of regional disparities in the European Union (EU) and therefore disparities can be understood as a *multidimensional problem*. According to horizontal classification of disparities, we usually define three basic types of regional disparities in EU: economic, social and territorial. *Economic disparities* represent different level of economic convergence of countries and regions that can be measured by economic indicators. *Social disparities* are related to how people perceive spatially differentiated quality of the life, standard of living or social inequality and they are mostly measured by the indicators of the labour market. Territorial disparities are expressed by the significant differences in the economic performance, geographical potential and transport and technical infrastructure, capacity for innovations or quality of environment.

In the European concept, the level of disparities can be regarded as a *measure of cohesion*. Cohesion can be expressed by such level of differences between countries, regions or groups that are politically and socially

tolerable (Molle, 2007). Based on typology of disparities, three dimensions of cohesion can be recognized. *Economic cohesion* evaluates economic convergence and can be expressed by disparities reducing development levels of countries and regions by economic indicators. *Social cohesion* tends to achieve objectives in employment and unemployment, education level, social exclusion of different groups and in demographic trends. *Territorial cohesion* is a supplementary term to economic and social cohesion. This concept develops economic and social cohesion by transferring the basic objective of EU, i.e. balanced and sustainable development into territorial context (Kutscherauer et al., 2010).

2 Material and Methods

Regional disparities are mostly analysed by simple measures of central tendency (mean, modus or median) and measures of absolute or relative variability (range, variance, standard deviation or coefficient of variation). These univariate statistics are mostly used in the first, descriptive stages of empirical research, before being supplemented by multivariate analysis that refers to all statistical techniques that simultaneously analyse multiple measurements on individuals or objects under investigation (Hair et al., 2009). Multivariate statistical methods take into account the multidimensionality of the data and they are able to examine relationships and differences in data (see e.g. Hair et al., 2009; Stevens, 2012 or Johnson and Wichern, 2014). Univariate and simple multivariate approaches to regional disparities measurement usually include point method, traffic light method (scaling), average or standard deviation, method of standardized variable and distance from the imaginary point (see e.g. Kutscherauer et al., 2010 or Melecký and Skokan, 2011). Another statistical methods use different measures of variability or dispersion, such as the absolute deviation, mean deviation, relative mean deviation, standard deviation or coefficient of variation (see e.g. Kutscherauer et al., 2010; Tvrdoň and Skokan, 2011; Melecký and Staníčková, 2011; Tvrdoň, 2012). More sophisticated multivariate methods represent Cluster analysis and Factor analysis widely used in many empirical studies (see e.g. Soares et al., 2003; Rovan and Sambt, 2003; Zivadinovic et al., 2009; Melecký, 2012). Alternative and not broadly extended approach to regional disparities measurement represents multi-criteria decision-making methods (see e.g. Tzeng and Huang, 2011, Saaty and Vargas, 2012 or Staníčková, 2012).

Relatively independent and in recent years frequently used approach to the measurement and evaluation of disparities in socioeconomic development is the construction of comprehensive integrated indicators and composite indices. *Composite indicators* (CIs) are increasingly recognised as a useful tool in policy analysis and public communication. The number of CIs in existence around the world is growing year after year (for a review see e.g. Bandura, 2006). CIs can be better to describe than to examine several independent indicators separately. On the other hand, can send misleading messages to policy makers if they are poorly constructed or interpreted as evidenced by Nardo et al. (2005). Composite indicators are much like mathematical or computational models. As such, their construction owes to universally accept scientific rules for encoding.

The definition type of composite indicator developed in this summary paper is adopted by the European Commission. CI is based on sub-indicators that have no common meaningful unit of measurement and there is no obvious way of weighting these sub-indicators as Saisana and Tarantola (2002) mentioned. Our contribution to regional disparities measurement presents construction of *Composite Weighted Aggregate Index of Disparities* (CWAID). Procedure of CWAID (see Fig. 1) is based on combination of selected multivariate mathematical and statistical methods that lead to unique three-layer model includes three sub-indices of economic, social and territorial disparities that can summarise complex and multidimensional view of regional disparities and are easier to interpret than a battery of many separate indicators. These composite indices of disparities reduce the visible size of a selected set of regional disparity indicators without dropping the underlying information base.

In the first layer of the model, method of standardized variable (Z-score) and method of distance from the imaginary point, presented as square Euclidean distance from median, is used. In the second layer, exploratory factor analysis for partial calculation of factor loadings (saturation) is used. Factor loadings present the correlation coefficients between the original variable and extracted factor by Principal component analysis and show how much of the variability of the factor explains.
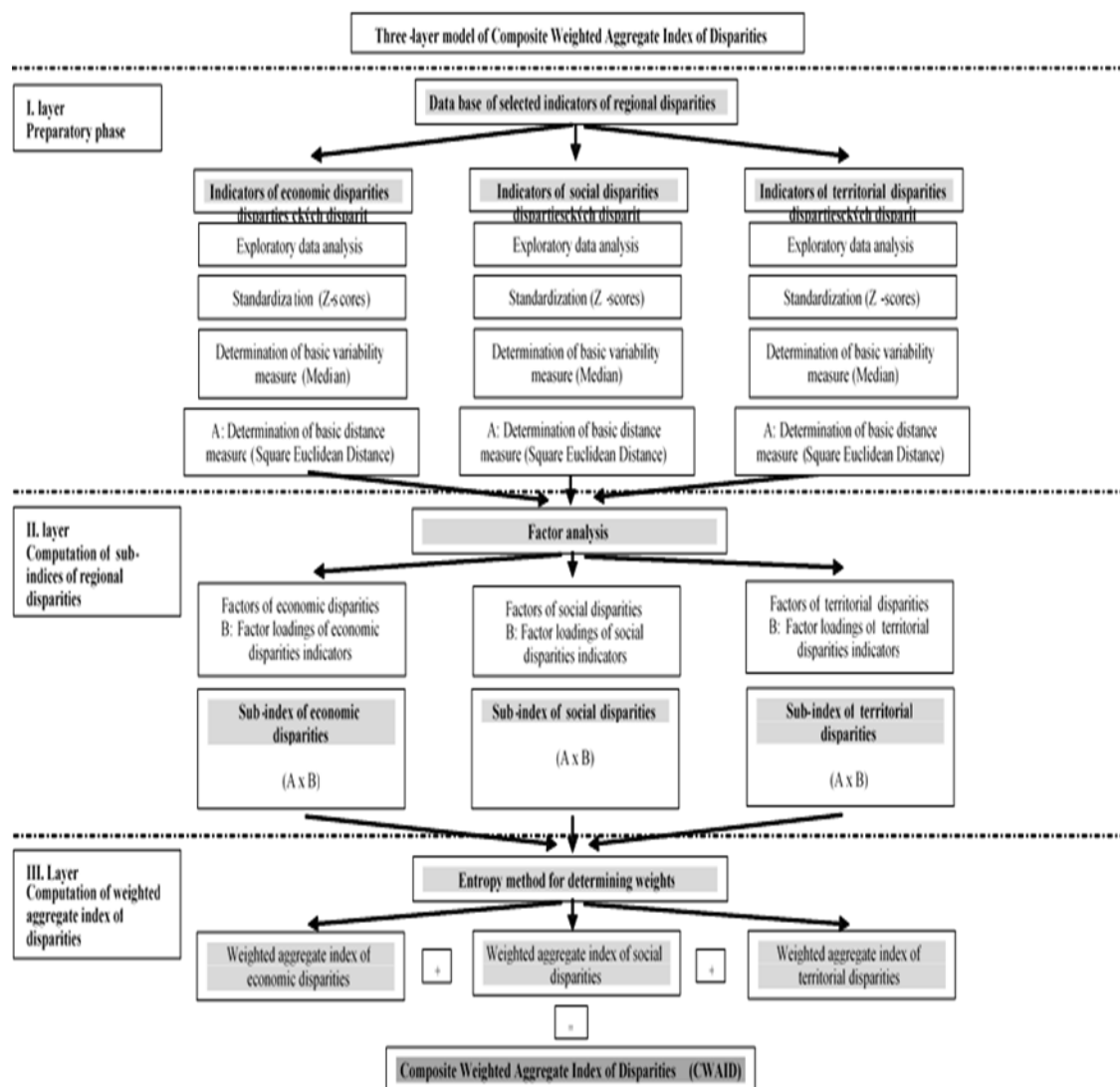
Fig. 1. Construction of Composite Weighted Aggregate Index of Disparities (CWAID)

Source: Authors` proposal and elaboration

Factor loadings therefore represent a full explanation of the role of each character (variable) in the definition of the factor. Factor loadings obtained from the factor analysis play the key role in the second layer of construction of composite sub-indices. They are used as normalized weights of standardized individual indicators of economic, social and territorial disparities. Normalized factor loadings for each indicator and dimension of disparities are therefore included in the calculation of Index of economic disparities (IED), Index of social disparities (ISD) and Index of territorial disparities (ITD). This procedure has been recommended e.g by Nardo, et al. (2005) or OECD (2008).

Weighting and aggregation systems have a crucial effect on outcome of proposed composite index. That is why this part of constructing composite index is the most discussed and criticized by opponents of composite indices. Although various functional forms for the underlying aggregation rules of a composite indicator have been developed in the literature, in the standard practice, a composite indicator, and example of CWAID as well, can be considered a *weighted linear aggregation rule* applied to a set of variables (see e.g. Munda and Nardo, 2005) as shown in third layer (see Fig. 1). The evaluation of the criteria *weights* may be subjective, objective and integrated. List of the most common weighting methods has been summarized in Ginevičius and Podvezko (2004) or OECD (2008). Concept of CWAID uses the objective approach based on *entropy method* to determine

the weight for all three sub-indices. The entropy method based on information on alternatives can be used only in case of a finite number of alternatives. This method requires knowledge of the values of all the criteria for all variants in the criterial matrix. In the theory of information the entropy is the criterion of uncertainty posed by a discrete probability distribution. This degree of uncertainty and entropy formula is expressed e.g. by Karmeshu (2003).

3 Data and Empirical Results

Case study of regional disparities measurement and evaluation is based on 24 selected indicators. Each dimension of disparities is presented by 8 selected indicators. The selection of adequate indicators of economic, social and territorial disparities observed at level of NUTS 2 regions has been identified within the *Reports on Economic, Social and Territorial Cohesion* that evaluate the trends of disparities and cohesion in EU Member States and their NUTS 2 regions (see European Commission, 2007, 2010). The reference period 2000–2012 is determined by selection of all indicators and their data availability for 35 NUTS 2 regions of V4 countries. Selected indicators, their initial units, criterion of optimization and source are shown in Tab. 1.

[1]   **Tab. 1.** Selected Indicators of Regional Disparities for V4 NUTS 2 Regions

Type of disparities	Indicator	Abbreviation	Criterion	Source
Economic disparities	GDP per capita	GDPpc	Maximum	Eurostat
	Disposable income of households	DI	Maximum	Eurostat
	Labour productivity per person employed	LP	Maximum	Eurostat
	Total intramural R&D expenditure	GERD	Maximum	Eurostat
	Gross fixed capital formation	GFCF	Maximum	Eurostat
	Human Resources in Science and Technology	HRST	Maximum	Eurostat
	Patent applications to the European Patent	EPO	Maximum	Eurostat
	Employment in technology and knowledge-	ETKI	Maximum	Eurostat
Social disparities	Employment rate	ER15to64	Maximum	Eurostat
	Employment rate of woman	ERw15to64	Maximum	Eurostat
	Employment rate of older workers	ER55to64	Maximum	Eurostat
	Unemployment rate	UR15to64	Minimum	Eurostat
	Unemployment rate of youth	URy15to24	Minimum	Eurostat
	Long-term unemployment	LtUR	Minimum	Eurostat
	Population aged 25-34 with tertiary education	PATE	Maximum	Eurostat
	Annual average population change	AAP	Maximum	Eurostat
Territorial disparities	Volume of municipal waste	VMW	Minimum	OECD
	Density of railway	DR	Maximum	Eurostat
	Density of motorway	DM	Maximum	Eurostat
	Hospital beds	HB	Maximum	Eurostat
	Number of tourist accommodation	TAE	Maximum	Eurostat
	Arrivals at tourist accommodation	ATAE	Maximum	Eurostat
	Victims in road accidents	VRA	Minimum	Eurostat
	Infant mortality rate	IMR	Minimum	Eurostat

Source: European Commission, 2007, 2010; Eurostat, 2014; own elaboration

Fig. 2 shows the graphical results of computed median values of sub-indices of disparities (IED, ISD and ITD) as well as weighted aggregate index of disparities (CWAID) within 35 V4 NUTS 2 regions for whole reference period. Average values of computed indices define the area of four polygons. The optimal form of illustrated polygons will be such a one point that would corresponds with zero modified squares Euclidean distances in each dimension. *Smaller area of polygon* marks the *lower rate of disparities* and therefore the *higher level of cohesion* and derived socioeconomic development in selected V4 NUTS 2 region. *Bigger area of polygon* marks the *higher rate of disparities* in each dimension and therefore the *smaller level of cohesion* and derived socioeconomic development in selected V4 NUTS 2 region. Average values of composite indices for whole period, as well as individual values for each year of the period, sign out that the rate of regional disparities in NUTS 2 regions with agglomeration of capital cities (CZ01, HU10, PL12 and SK01) is rather smaller than in rest of V4 NUTS 2 regions.

Fig. 2. Composite Indices of Regional Disparities (2000-2012

)
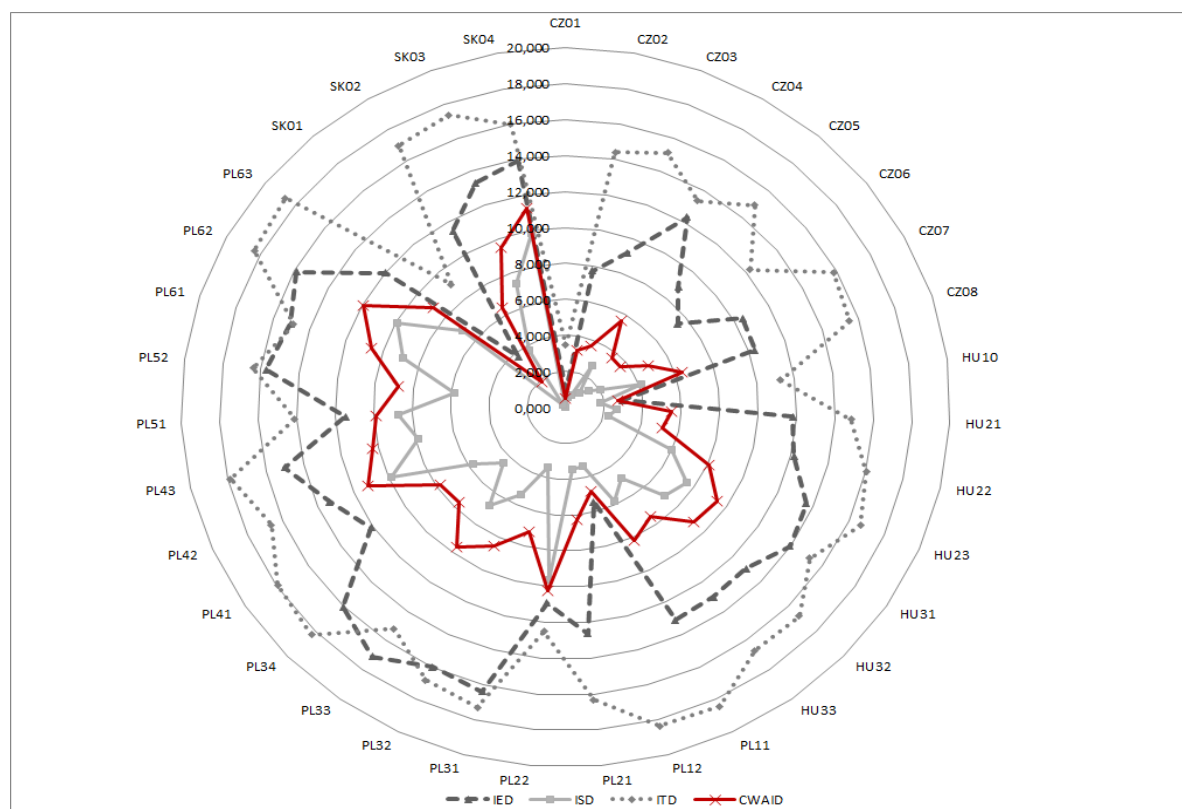
Source: Own calculation and elaboration

4. Conclusion

Construction of CWAID model contributes namely in ability to summarize the different units of measure under the one synthetic characteristic which is the dimensionless figure. The empirical analysis showed that, for the most part, there was a consensus in the trends of V4 NUTS 2 regions in terms of attainment level of disparities and development potential, depending on the level of existing disparities and the initial hypothesis of the paper can be confirmed. Construction of composite indices and calculation of disparities showed that since the year 2000 positive economic, social and territorial development has been monitored in V4 NUTS 2 regions and thus level of cohesion recorded increasing trend thanks to mostly decreasing volume of regional disparities. In spite of narrowing rate of economic, social and territorial disparities and convergence process in level of cohesion, the significant regional disparities between V4 countries still remain. In relative terms (without affecting the absolute values) ISD in V4 countries achieved the highest rate of relative variability and ITD achieved the smallest rate of relative variability presented by coefficient of variation.

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FINANCING TRANSPORT INFRASTRUCTURE USING VALUE CAPTURE FINANCE: A FRAMEWORK APPROACH

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Abstract

Cities around the world, which are making sizeable infrastructure investments, are increasingly looking to deploy Value Capture Finance (VCF) instruments as a potential solution for raising more revenue to defray costs associated with the construction and operation of public transport systems. This paper presents an incremental assessment framework for investments in transport infrastructure ("I-FIT") which integrates economic theory with operational planning methods. The aim in this work is to establish a framework for developing VCF instruments that are advanced in theory, practical in operation and useful in policy-making. The application of the framework is demonstrated through a case study of the Warsaw Metro project.

Key words: Value Capture Finance, transport infrastructure, framework approach, Warsaw Metro

1. Introduction

Value Capture Finance (VCF) has a storied history dating to the work of Henry George (George, 1879). It is a process of quantifying and extracting the additional value that accrues to a property as a result of public investment in the provision of public transport, consistent with sound economic and tax principles (Batt, 2001; Vickrey, 2001; Peterson, 2009). As a policy instrument, VCF supports cost-sharing arrangements between stakeholders benefiting from additional infrastructure, and promotes the integration of transport planning into development planning (Suzuki et al., 2015) (Figure 1).

Figure 1. The Value Capture Finance approach
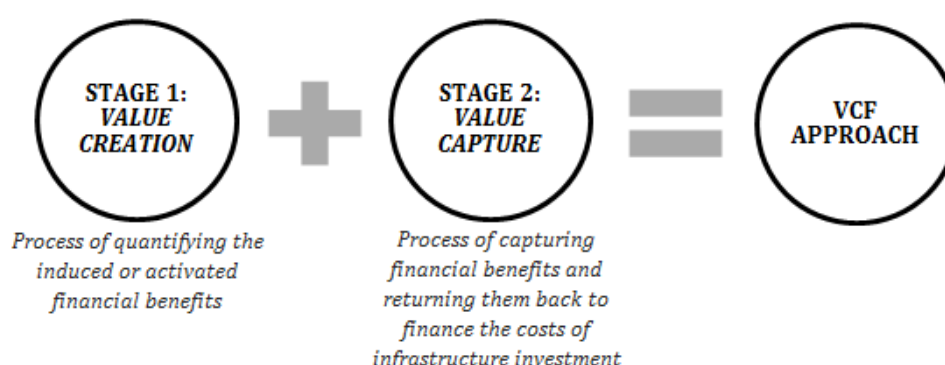
VCF capitalises on the symbiotic relationship between public transport infrastructure and land value benefits, which has been established in a large body of empirical research (Huang, 1996; Geurs and van Wee, 2004; Smith and Gihring, 2006; Medda, 2012). Despite this accumulated evidence, much of the work has tended toward the development of stylised examples and simulations of hypothetical applications (Batt, 2001; Du and Mulley, 2007; Vadali, 2009). Theoretical, conceptual and practical gaps remain in the field of VCF, which prevent wider adoption of the approach by cities across Europe which are presently making sizable investments in public transport infrastructure.

This paper extends the accumulated knowledge on the topic by introducing an Incremental Assessment Framework for Investments in Transport Infrastructure ("I-FIT") to guide development of VCF instruments in countries where their application remains limited. The application of the framework is demonstrated through a case study of the Warsaw Metro project.

2. I-FIT: Framework for capturing transport-induced financial benefits

Financing transport infrastructure using VCF has a number of complexities associated with VCF economic theory and strategic and operational planning methods. I-FIT is based on an approach that emphasises transparency in methodological choices, data analysis and the links between the stages of the analysis (Pope et al., 2000; Ritchie and Lewis, 2003; Braun and Clark, 2006). It combines qualitative and quantitative methods of analysis – a mixed-method approach, as it offers a richer understanding of complex issues (Church and Rogers, 2006; Starr, 2014).

In the result, I-FIT allows for establishing VCF instruments that are advanced in theory, practical in implementation and effective in public transport policy-making.

I-FIT comprises three steps that represent key stages of the process of modelling value creation potential (Figure 2). The cornerstone of I-FIT is the concept that the location of activities and the economic linkages between them result in demands for improved accessibility.

Figure 2. Steps of the I-FIT Framework
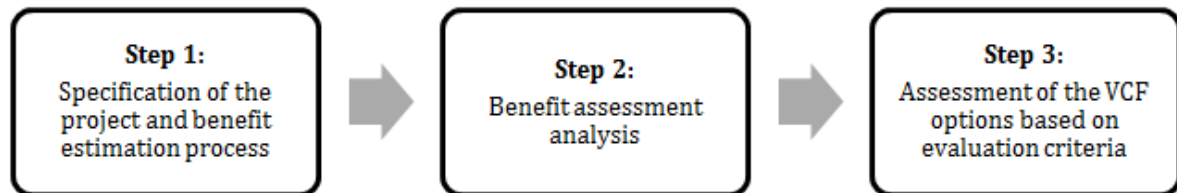
The modular structure of I-FIT has a number of advantages from the perspective of policy-making. First, it introduces a structure for the VCF assessment process to capture in a systematic way a sequence of guiding, incremental steps to quantify transport-induced benefits and to define a mechanism able to recapture the benefits. Second, the I-FIT balances problem solving actions with data-driven analysis (Reason and Bradbury, 2001) and produces guidelines for best practice (Denscombe, 2010). Finally, the I-FIT provides flexibility that enables the capture of specificities of a particular case. It is important to note that the framework does not prescribe an 'off-the shelf' solution. As Medda and Modelewska (2011) observe, it is disingenuous to use a standardised model of VCF instruments that can be replicated across cities.

3. Structure of the I-FIT Framework
This section describes the structure of the framework.

3.1. Step 1: Specification of the project and benefit estimation process
The objective of the first step is to specify the components of the benefit estimation process. Step 1 comprises three modules:
- Module 1 specifies the transport system whose impacts will be evaluated. Within this module three sub-modules define, (i) the mode of transport and its specific technical characteristics, (ii) timing of the impact, and (iii) cost structure;
- Module 2 specifies a real estate market where transport accessibility capitalises in property and land values. Two sub-modules define, (i) a segment of the real estate market, and (ii) a catchment area; and
- Module 3 specifies an estimation process. Again we have two sub-modules. These define, (i) an estimation method, and (ii) associated data requirements for modelling value creation.

3.2. Step 2: Benefit assessment analysis
The objective of step 2 is to conduct the benefit assessment analysis. Step 2 has two modules:
- Module 4 estimates and quantifies the transport-induced financial benefits. Two sub-modules are relevant here: (i) pattern analysis, and (ii) modelling of financial returns; and
- Module 5 evaluates policy and contextual factors in which accessibility benefits occur and are captured. It is comprised of four sub-modules (i) regulatory and institutional factors, (ii) implementation factors, (iii) public acceptance, and (iv) macro-economic situation. It is important to mention that the analysis of policy and contextual situation should take place before the specification of the VCF instrument because a good understanding of these contextual factors is an important prerequisite in the search for an enhanced transport funding strategy.

3.3. Step 3: Assessment of the VCF options based on evaluation criteria
The final step of the I-FIT is the assessment of VCF implementation potential through the use of information collected and generated in Steps 1 and 2. It aims at operationalising the framework by providing understanding of the general advantages and disadvantages of the potential VCF instrument. These are assessed against six criteria which capture both the quantity and the quality dimensions of data and information (TRB, 2006; TRB,

2009). These criteria are: (i) revenue yield adequacy and stability; (ii) cost efficiency in the application of sources; (iii) equity; (iv) economic efficiency; (v) public acceptance; and (vi) technical (implementation) feasibility.

4. Case study: The Warsaw Metro System

Warsaw is a rapidly growing metropolitan city in Poland with an ambitious programme to develop and modernise its public transport infrastructure in order to meet growing demand for reliable and fast service. After more than 20 years of investment, Warsaw completed construction of the first line of its metro system in 2008. The impact of this mode of transport on adjacent property prices has not yet been studied empirically. Therefore, the main objective of the present analysis is to examine the relationship between the metro system and the pattern of property prices in Warsaw's districts. The results of the analysis are expected to lead to important policy considerations in relation to the use of VCF instruments in Poland.

4.1. Model and data description

Using a hedonic pricing model (Rosen, 1974), we have examined an isolated effect of transport investment on property prices by analysing the effect of transportation accessibility (*MetroAccess)* on the sales price of residential properties (P_u) in Bielany and Targówek districts. The general structure of the OLS model is:

$$\ln\big(P_u(X_i, D_i)\big) = \alpha + \beta_0 MetroAccess + \sum_{i=1}^{k} \beta_{i+1} X_i + \sum_{j=1}^{l} \beta_{j+k} D_j + \varepsilon$$

$$\varepsilon \sim N(0, \sigma^2 I)$$

Four hedonic price models were estimated using AMRON database of residential properties' purchase prices between January 2004 and March 2010. The models account for physical and accessibility attributes of properties (X_i are explanatory variables for structural attributes of property u, D_j represents dummy-coded variables capturing the location characteristics), with accessibility structured as an all-or-nothing influence.

4.2. Empirical results

The estimated models revealed that the properties located within 250m from a metro station in Bielany and Targówek districts are characterised by on average, respectively, 10% and 2.4% higher sale prices than properties in the same district but located farther away. In principle, the positive effect can be explained by two factors. First, increased accessibility has a positive capitalisation effect on properties that earlier did not have public transport infrastructure. Second, people perceive increased accessibility to be greater after the opening of the new transportation corridor than before the project is carried out.

4.3. Discussion

Following the analysis of our unique Warsaw context, we observed that the Polish government and the Warsaw city authority are able to influence the pattern of urban development, not only through taxation and financial policies and provision of infrastructure, but also through planning and regulatory controls over how land is used. In this context, three possible VCF mechanisms are emerging, and these could be considered by the Warsaw authority in order to defray costs of future investments in the metro system extension (i) Property Tax Mechanism, (ii) Betterment Levy, and (iii) Joint Development. These VCF instruments provide fair, efficient and stable sources of revenue and may represent a significant and direct contribution to defray the costs of an investment. However, since the Polish tax administration still suffers from its inheritance of underdeveloped administrative practices, particularly with regard to the enforcement feasibility and lack of revenue autonomy at regional and local levels, the costs for administrative and legislative implementation may exceed the accrued revenues gained through land value capture taxation in the short-term.

5. Conclusion

In this paper we have outlined the I-FIT framework which provides a method for determining the potential of Value Capture Finance (VCF) as a means of financing public transport infrastructure investment. Steps and modules of the framework have been described which give rise to the advantages of a modular structure from a policy-making perspective. The I-FIT framework was then used to evaluate the impact of the metro system on property markets in Warsaw, where VCF instruments are not yet widely applied. Our findings verify that the public transport infrastructure does capitalise in property prices, and VCF can provide a financially viable source of revenue to defray the costs of new transport investments. Further studies of other transport modes would nevertheless be beneficial in order to re-confirm the results.

Note
This work is based on a PhD research project "Financing Transport Infrastructure Using Value Capture Finance."

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THE IMPACT OF BROADBAND AND OTHER INFRASTRUCTURE ON FIRM LOCATION CHOICES

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Introduction
The impact of infrastructure on regional development has been the subject of many research papers. These have considered the impact of aggregate measures of infrastructure like the public capital stock or individual

infrastructures such as motorways. More recently the impact of ICT infrastructure, and in particular broadband infrastructure has been the focus of some research and much debate. While policy makers often assert that broadband can overcome peripherality, research has shown that the effect of broadband is more significant in urban areas.

This paper analyses the impact of broadband infrastructure, as well as other infrastructure including motorways, airports and railways and a range of other factors such as human capital and third level institutes on new business establishments. New business establishments are an important indicator of the future economic performance of regions and thus the drivers of this will also impact on regional economic performance.

Data

The data for the analysis is a panel of new firms in Ireland for the period 2002 to 2011 covering 192 urban fields that are defined on the basis of employment densities. This period encompasses the entire history of broadband development and uniquely in Ireland also accounts for 86% of the development of the motorway network.

Concentrating on urban fields reduces the problem of excess zeros, which is common to this type of analysis. However we also explicitly account for excess zeros as a robustness check. The focus of the analysis in this paper is on urban fields outside of Dublin, as these were targeted by government support to develop what was termed Metropolitan Area Networks (broadband) and because the Dublin city region due to its scale and role as a capital city is uniquely attractive location for new firms in Ireland. Thus, our analysis is an evaluation of how infrastructure roll-out affects regional towns and cities.

Developing a meaningful and accurate representation of broadband availability at a local level can be difficult. The literature shows that many errors and inconsistencies arise when using post code level data to measure broadband (see Taylor and Schejter, 2013). The innovation of our paper is to create a unique dataset of broadband that includes the roll-out of traditional "lastmile" DSL; a large public investment into middlemile fibre rings; and data on competition in the local backhaul market. This allows us to account for the quality of broadband, where broadband is available. This is a valuable contribution to the literature, as our data does not suffer from the above mentioned errors and inconsistencies. Moreover, we are able to take a longitudinal approach to our estimations and our dataset covers the entire history of broadband availability in Ireland.

For infrastructures other than broadband, the infrastructure variables are measured in terms of the time it takes to drive to the nearest infrastructure (e.g. motorway junction), which given that the data is for relatively small spatial units is more appropriate than the use of dummy variables to account for infrastructure availability that omit the likely spatial spillovers of the benefits of nearby infrastructures.

We have data on extensions to the motorway network during a period in which 86% of the current motorway network was constructed. As both the roll-out of broadband (in terms of availability and quality) and the construction of the motorway network were not uniform in both time and geography, the data incorporates significant variation over the observed period.
Supplementing these, we have information on drive-times to the nearest airport, rail station and third-level institute, along with a range of measures to characterise local human capital, labour markets and agglomeration economies.

Empirical Approach and Results

The empirical methodology is to model counts of newly established firms using Poisson and Negative-binomial estimators, which unlike the conditional logit does not imply a zero sum game. New firm counts in a particular area in each time period are modelled as function of area characteristics, with time effects and sector-type effects included also, for sector-specific regressions.

A number of econometric issues exist in modelling firm counts at disaggregated spatial scales. The afore mentioned excess zero problem; spatial dependence; the potential for an endogenous relationship to exist between the dependent and a number of the independent variables; and the issues of unobserved area characteristics that may be correlated with the residuals. We address these issues by explicitly accounting for them where possible and appropriate. For example we use lagged explanatory variables to address endogeneity issues and we also control for common time varying effects are accounted for using year specific fixed effects.

On average, the introduction of broadband in an area is associated with increased new firm counts. We find that traditional DSL has resulted in increased counts of both high and low-tech firms, while the benefits of middle-mile fibre appear to be confined to the high-tech sector. There is an additional effect in areas with greater competition in the local backhaul network. The elasticity of new firm counts with respect to broadband is greater for foreign firms than for indigenous, but the marginal effect, in terms of increased new business establishments is smaller, as the rate of new foreign owned establishments is much lower than that of indigenous firms.

Accessibility, measured by drive times, appears important to high-tech FDI, but less so for indigenous and low-tech firms, with the relative importance of proximity to airports almost twice that of proximity to motorway junctions. Consistent with other research we find that diversity of skills in an area is more important for new business establishments than specialisation, which also supports the "Nursery City" argument proposed in the literature (e.g. Duranton and Puga, 2001).

The most striking results are those related to human capital. Proximity to third level institutions is highly significant for all firm-types, with the exception of low-tech FDI. The level of educational attainment is important for firms of all types, but particularly those in high-tech sectors. Furthermore, pre-existing levels of human capital appear to be an important indicator of an area's ability to absorb new ICT technologies productively. The local unemployment rate has a positive and significant effect on new business establishments for FDI and the high-tech sector, perhaps suggesting labour availability.

Further analysis is conducted on the interaction between broadband provision and educational attainment in an area. This reveals that the benefits of broadband, in terms of increased new high-tech firms, is greater in areas with higher pre-existing educational attainment, and may not encourage new business at all below a certain threshold of educational attainment. This finding echoes previous work that cautions that while broadband is a key factor in dispersing knowledge intensive firms (Mack and Rey, 2014); it should not be viewed as the only factor.

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UNLISTED INFRASTRUCTURE: UNDERSTANDING THE COMPLEXITY OF A NEW VAST ASSET CLASS

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Introduction

Although over the past several years the implementation of infrastructure initiatives has been considerable worldwide, when we consider the long-run tremendous needs for infrastructure projects, one can very easily conclude that the investment market is nowhere near saturation. The funding requirements to sustain regional economic growth through infrastructure investments, in both developed and developing countries, are likely to reach trillions of dollars. However, the drain of public resources due to the recent financial crisis has created a funding shortfall and prompted many governments and local authorities to embrace the financing of public infrastructure[17] by the private sector.

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[17] Infrastructure investments are often split into two categories. One is social infrastructure, which refers to investments such as hospitals, prisons and schools. The second category is economic infrastructure, which comprises transportation, energy, telecommunications, and utilities.

Infrastructure assets are either Unlisted investments funded directly by investors or they are Listed on the stock market. Listed infrastructure includes publicly traded securities issued by companies that own and/or operate infrastructure assets (Russell Investments, 2014). While historically the domain was investing in this asset class through unlisted infrastructure, the promising listed market offers investors alternative ways of investing in this asset class which provide several benefits above and beyond the unlisted market. For instance, listed infrastructure investments are more transparent and more liquid than their unlisted counterparts; it is easier to diversify across regions or sectors; listed infrastructure has lower management fees; and these investments are usually less leveraged.

Given the present day positive attitude towards infrastructure investments, the analysis of infrastructure in the context of a portfolio is certainly of vital importance to institutional investors. A large number of scholars have tested the effects of infrastructure in a portfolio (Idzorek and Armstrong (2009); CSAM (2010); RREEF (2011); Oyedele (2013; 2014)). But while others have acknowledged the challenges of optimising listed infrastructure and have questioned the suitability of the traditional portfolio optimising techniques due to their non-normal returns and the persistence of fat tail risks, to our knowledge only three papers have implemented alternative risk management methodologies (Finkezeller, Dechant and Schafers (2010); Dechant and Finkenzeller (2012); and Bianchi et al. (2012)). Furthermore, the relative novelty of the infrastructure sector and the availability of only small datasets also hinders accurate predictions of infrastructure's financial performance, and thus prevents the construction of an infrastructure portfolio that can achieve sustainable regional economic growth. For this reason, private investors generally allocate a smaller proportion to infrastructure investments in their portfolios compared to other alternative investments such as real estate projects.

In this work we study the optimal investing strategies when considering infrastructure projects that could augment private finance participation. The analysis investigates the differences in the performance of investment portfolios when different risk objectives are applied. We conclude by identifying the best strategies to be used in the optimisation of infrastructure, increasing in this way the capacity of the intervention to achieve additionality in regional economic growth.

Data and Methodology
In order to address our objective, we have collected data from Thomson Reuters Database. The data include historical time series of monthly returns of European indices over a time span of 11 years (2003-2013). The indices collected are Thomson Reuters European indices in Energy, Utilities, Transport, Telecommunications, Government Bonds, Real Estate, and Stocks.

In the present paper we examine which technique to use when constructing an optimal portfolio that includes infrastructure investments. We investigate the effect on the performance of our portfolio when minimising in the objective function different types of risk. To carry out the work, we use traditional techniques such as the Mean-Variance Optimisation (Markowitz, 1952; 1959), Mean-Absolute Deviation (Konno and Yamazaki (1991), Konno and Shirakawa (1994), Konno and Wijayanayake (1999)), and more recent risk management techniques such as Conditional Value at Risk (Rockafellar and Uryaser, 2000; 2001) and Conditional Drawdown at Risk (Chekhlov et al., 1999).

In confirming the best methodology when constructing a portfolio which includes infrastructure investments, the following optimisation problem is set up:

$$\min \quad \Phi_{Risk\ (x_1\ldots\ldots x_n)}$$

(1)
Subject to

$$0 \leq x_i \leq 0.8, \quad i= 1,\ldots.n,$$

(2)

$$\sum_{i=1}^{n} x_{i=1,}$$

(3)

The objective function (1) represents the risk of the portfolio, which will either be the Variance risk measure, MAD, a-CVaR, or a-CDaR risk measure. All four types of risk are defined below.
The return of the portfolio in all four cases is calculated as:

$$Return_{\ portfolio} = \sum_{1}^{n} w_i\ *\ r_i$$

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(4)

where,

- w_i = Weight of ith/individual security or asset in portfolio.
- r_i = Return of individual security.

Results

In the analysis we have carried out two sets of numerical experiments. The first is called the 'in-sample analysis,' where each optimisation technique is applied in all of the datasets. The results of each optimisation are compared in two ways:

i)   An efficient frontier is constructed for all four portfolios in each risk proxy. This will enable us to compare the efficient frontiers and observe any differences.

ii)   By using area plots we visualise the weights of all the optimisations and compare the weights of the chosen assets.

The in-sample analysis is appropriate as long as we are certain that history will repeat itself. To compare the actual performance of each optimisation, however, an 'out-of-sample analysis' is used. The out-of-sample analysis enables us to compare which optimisation is able to produce the most successful portfolio management strategy by using historical information.

In-sample analysis

When performing the in-sample calculation we can observe that all four techniques provide similar results. As can be seen from figure 1, all the efficient frontiers in each risk measure show extreme similarities, with only minor differences presented by the CDaR optimisation at lower levels of risk.

Figure 1: Efficient frontiers in the Return/Risk space for each of our 4 optimisations
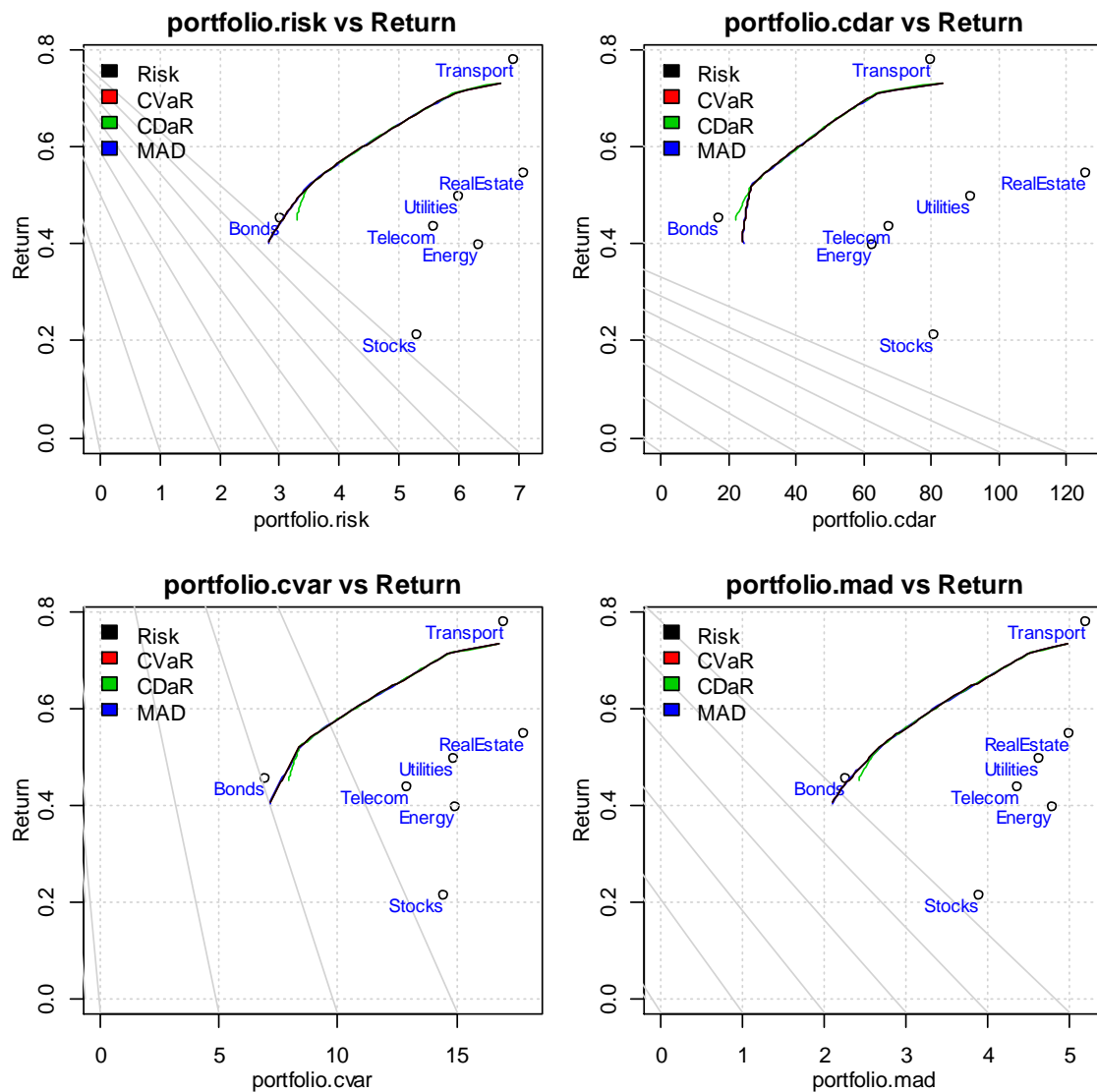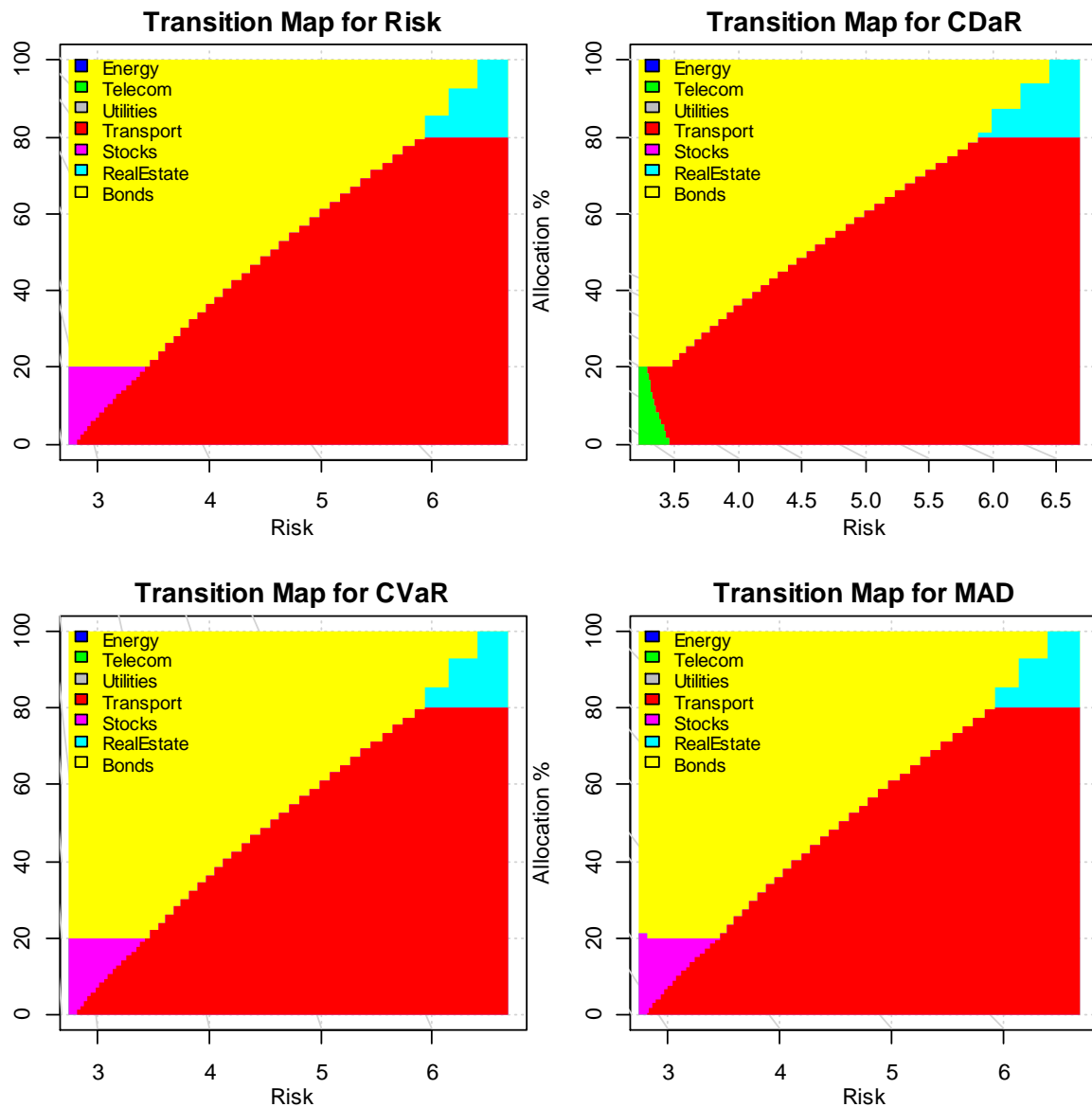

Source: Author's calculation.

As we can see in figure 2, the allocation of the assets in the in-sample analysis also appears to be very similar in all four optimisations. This holds especially true for Mean-Variance, CVaR and MAD optimisations, as all three invest in the same assets: Transport, Bonds, Real Estate, and Stocks. The weights of the allocation for each asset are also quite similar, with only minor differences observable at lower and upper levels of risk.

Conversely, the CDaR optimisation shows more differences in the allocation of assets at lower levels of risk, because instead of investing in Stocks, the CDaR optimisation invests in Telecommunications. Nevertheless, despite these minor differences we can argue that in the in-sample analysis none of the optimisation techniques is superior to the others.

**Figure 2:** Transition maps for each of our 4 optimisation techniques

Source: Author's calculation.

Out-of-sample analysis

In the out-of-sample analysis we use part of the data for scenario generation and the remainder for evaluating the performance of the strategy. Thus, the first three months of the data, January 2003 to March 2003, are used as the initial historical data for constructing the first portfolio to invest in April 2003. The portfolio's realised value is calculated by observing the historical prices for March 2003. One more month is added, April 2003, to the data, which is used to generate the optimal portfolio to invest in May 2003, and so on.

Figure 3 illustrates the historical cumulative performance of the optimal portfolios under all four different risk optimisation techniques. From figure 3 we can observe that, from mid-2008 onwards, the performance of the optimal portfolio under the CVaR and CDaR techniques is superior to the Mean-Variance and MAD optimisation.

Figure 3: Cumulative performance of the optimal portfolios of the 4 risk optimisation techniques
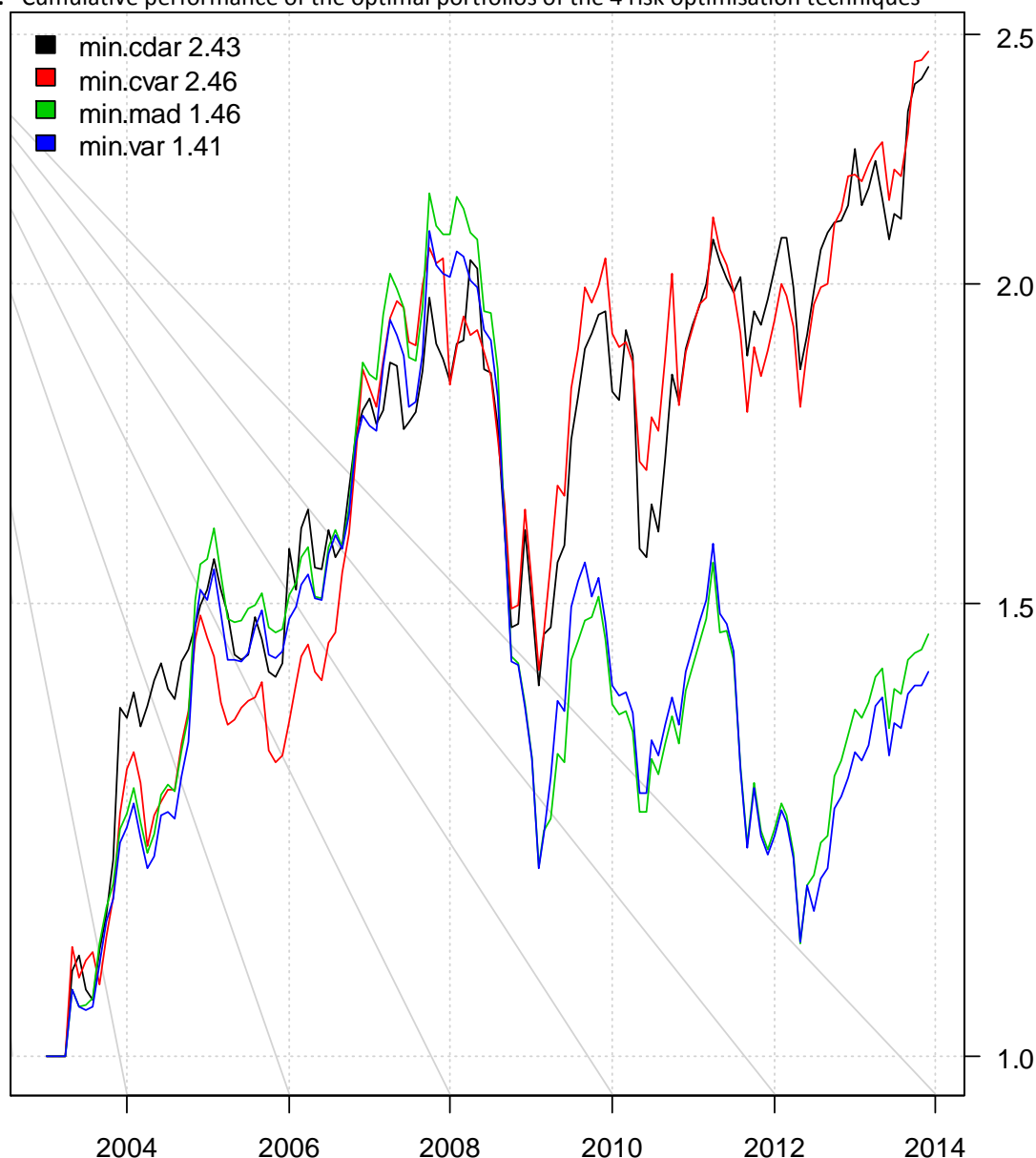
Source: Author's calculation.

In order to compare the risk/return performance of the optimal portfolios for each optimisation, a series of different statistics were calculated and can be seen in table 1. In terms of risk, the Minimising CVaR and CDaR have resulted in optimal portfolios that illustrate lower volatility, lower Average and Maximum Drawdown, and lower Value-at-Risk, and Conditional Value-at-Risk. In terms of risk-adjusted returns, by minimising the CVaR and CDaR objective, we will achieve a portfolio with better risk-adjusted returns as, illustrated by a higher Sharp Index.

Table 1: Risk statistics for the 4 optimal portfolios over the period 2003-2013

Risk Measure	Min-CVaR Optimisation 2003-2013	Min-CDaR Optimisation 2003-2013	Min-Mad Optimisation 2003-2013	Min-Variance Optimisation 2003-2013
Sharp Ratio	0.62	0.65	0.32	0.30
Volatility	14.96	14.31	13.66	13.50
MaxDD	-31.81	-31.57	-48.99	-47.22
AvgDD	-7.60	-9.38	-10.68	-9.20
VaR	-6.85	-6.63	-6.47	-6.37
CVaR	-9.02	-8.63	-9.15	-8.98

Conclusion

The focus on alternative investments has unquestionably become a rallying cry for investors as they keep placing higher reliance on alternatives. Listed Infrastructure is attractive to investors because it provides them with a combination of the unique characteristics of direct infrastructure along with the growth of the equities market. Given global infrastructure requirements, investment opportunities within this asset class are likely to reach funding requirements of trillions of dollars. Investors should therefore be further encouraged to invest in this asset class; and one way to achieve this is through gaining deeper understanding of these investments.

This paper has examined the best optimisation technique to use when building a portfolio of infrastructure assets. Our results demonstrated that, in the 'in-sample analysis,' the four risk objectives produced relatively similar portfolio structures. Whereas the 'out-of-sample analysis' showed that when we imposed risk management techniques (minimising the CVaR and the CDaR objective function), the out-of-sample performance of the portfolio improved, both in terms of return and of risks.

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INVESTMENT IN SMART CITIES: USING GREEN BONDS TO FINANCE URBAN ENERGY INFRASTRUCTURE

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Introduction

In order to have a chance of keeping global warming within the IPC 2°C limit, the IEA estimates that 'an additional $36 trillion in clean energy investment is needed through 2050—or an average of $1 trillion more per year compared to a "business as usual" scenario over the next 36 years,' and this is despite a pre-existing infrastructure investment gap. [1],[2],[3] In order to address this issue, this paper will provide an analysis of the climate-related municipal bond markets in the United States in order to investigate whether these types of "green" financial instruments are effective in encouraging the uptake of smart energy projects, and whether green municipal bonds would be effective within the European context.

Municipal Bonds

Municipal (muni) bonds are sub-sovereign bonds that are issued by non-national public entities, such as cities, counties, universities, etc. and are commonly used to raise capital for infrastructure development. At present, over a million municipal bonds are outstanding in the U.S., with a total principle value of $3.6 trillion.[7] One distinguishing feature of the American muni bond market is that individual retail investors buy and hold the majority (about 75%) of bond issuances, largely due to the tax advantages that muni bonds offer. At present, the European sub-sovereign market is only about 15% of the size of the US municipal bond market, which could mean that it has growth potential, especially for European cities that are searching for capital for infrastructure development.

The Rise of Green Bonds

Within the municipal bond universe, there are bonds that are used to finance infrastructure that aims to reduce greenhouse emissions and/or decrease dependency on fossil fuels. These bonds are often referred to as "climate bonds" or "green bonds", however the term green bonds has come to refer specifically to climate bonds that have been formally labelled as green bonds. The main characteristics of climate and green bonds is that they conform to climate-friendly frameworks for investment [15], [16] along with impact reporting that facilitates ensuring that bond proceeds are actually invested in the projects that they were intended for. [17]

Municipal bonds broadly have two types: general obligation bonds, or revenue bonds. General obligation bonds are guaranteed on the basis of local tax receipts, and revenue bonds are secured on the expected revenues generated from a public project.[18] However, there are two more types of bonds that are important in the context of the green municipal bond market in the United States: CREBs and QECBs.

CREBs, Clean Renewable Energy Bonds, are tax-exempt muni bonds that were created specifically to provide a mechanism for raising money for energy technologies such as: geothermal, solar, wind, biomass, hydroelectric, waste to energy, and tidal. Eligible issuers include local and state governments and schools. [19] QECBs, or Qualified Energy Conservation Bonds, can finance the same types of energy projects as CREBs, however the funds are allocated from the federal government to each state proportional to population. From there, each state can distribute its QECBs funds to eligible energy project applications that come from municipal governments as a means of offering low cost financing.[20] The CREB and QECB bond mechanisms, amongst others, have encouraged about $230 million annually in new bond issuances, and nearly $2 billion of tax-exempt green muni bonds have been sold in the U.S. since September 2014. [21]

Methodology

The EMMA municipal bond database was used to aggregate a collection of climate-related U.S. muni bonds, both those that are labelled as green bonds and those that related to renewable energy and efficiency projects. This data was combined with a collection of all municipal climate and green bonds issued from 2007 to early 2015 as collected by the Climate Bonds Initiative. These bonds are a compilation of climate-friendly muni bonds, where the use of their proceeds is ringfenced or earmarked for projects that are in alignment with the Climate Bond Standard.[22] These bonds are not necessarily labelled green bonds, however the ones that are labelled as green bonds were indicated as such.

We break the bonds down by issuance size, sector, type, date of issuance, tenor, and coupon. While the vast majority of these bonds were U.S. municipal bonds, some international municipal bonds were included as this is an area of growth. After analysing the U.S. muni bond data to find trends, we also did some comparative analysis between the U.S. and global markets. In our analysis, we mostly focus on the amount of financing raised by bond issuances rather than the number of bonds issued.

Results and Analysis

For our preliminary analysis, we looked at the green muni bond market in the U.S. exclusively. We calculated the total amount of proceed raised by sector, where the sector categories include: Agriculture and forests, buildings and infrastructure (B&I, whether new low carbon building or retrofitting existing buildings), energy (renewable and sustainable), transport (generally rail), waste processing, and water management. As can be seen in Figure 6, U.S. green bond issuances are dominated by three major sectors: water, energy, and buildings and infrastructure, each of which are about 30% of the total proceeds raised. The next most active sector is transport, the majority of which is funds raised for rail infrastructure.
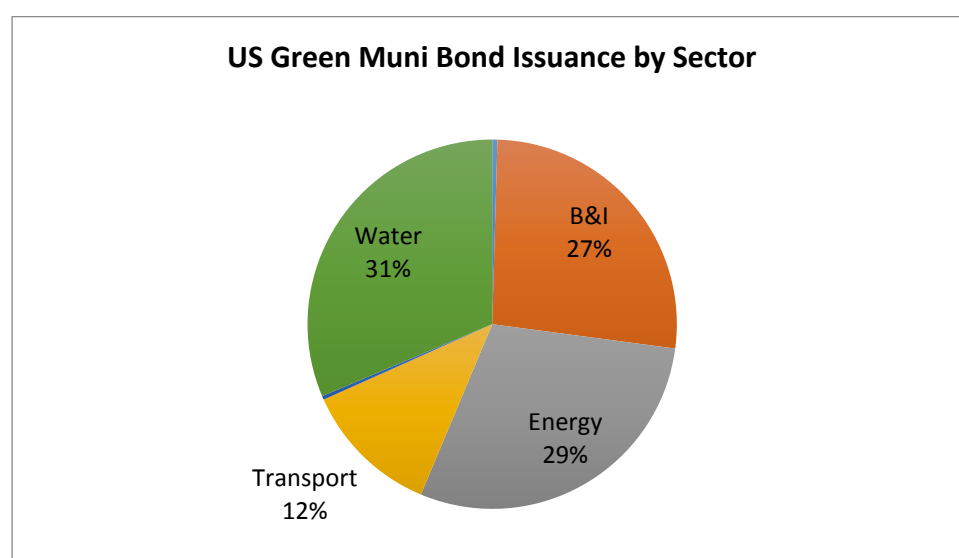

Figure 6: Number of green municipal bond issuances by sector.

Next, we broke the total sum of climate-friendly municipal bond issuances down by type of bond. There is some overlap between the type of bond issued and the sector, as can be seen from the description of CREBs and QECBs given in the introduction: both of these types of bonds are specifically for energy (CREBs) and low-carbon buildings and infrastructure (QECBs). Also, breaking down by sector reveals the portion of these climate muni bonds that are labelled as "green bonds", currently 56% of the green muni bond market in the U.S. As shown in

Sum of Amt Outstanding (LCL)	
Row Labels	Total
CREB	$506,745,000
Energy	$506,745,000
EE Muni	$116,920,000
B&I	$116,920,000
green bond	$4,336,430,000
Agri & Forests	$35,025,000
B&I	$1,339,285,000
Energy	$223,515,000
Transport	$321,095,000
Water	$2,417,510,000

QECB	$598,000,668
B&I	$598,000,668
Rail Muni	$603,180,000
Transport	$603,180,000
renewables	$1,545,835,000
Energy	$1,520,700,000
Waste	$25,135,000
Grand Total	**$7,707,110,668**

Figure 8, these green bonds are mostly for buildings and infrastructure, followed by water. Only 5% of the issuances of labelled green bonds are intended for energy projects, but this could be attributed to the fact that the specialised low-carbon energy bond categories, like QECBs and CREBs, account for more of these types of projects.
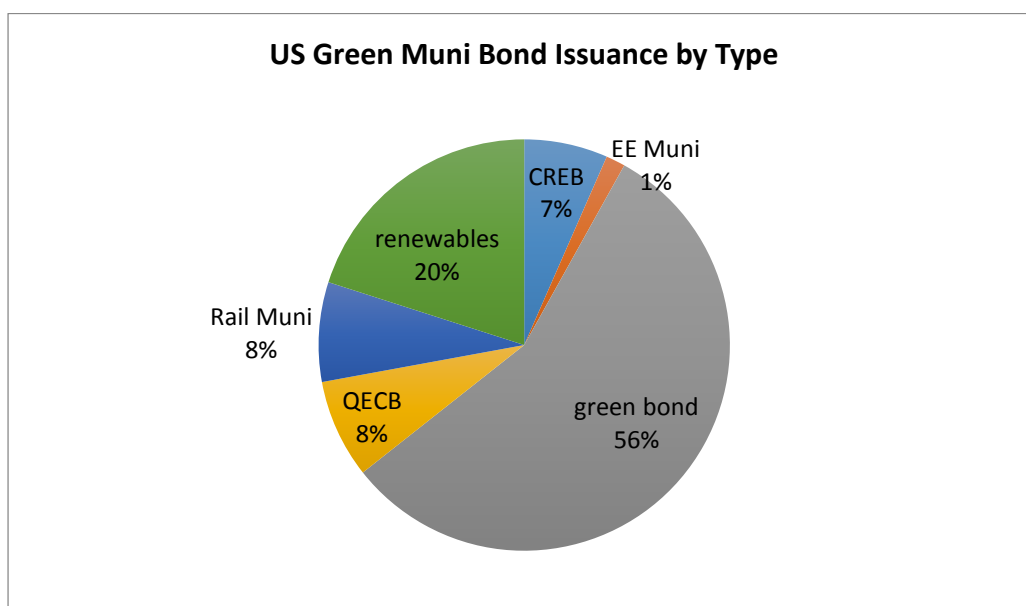

Figure 7: U.S. climate and green muni bond issuances since 2007 by type. Green bonds are labelled green bonds. The rest are unlabelled but climate-related.

Sum of Amt Outstanding (LCL)	
Row Labels	Total
CREB	$506,745,000
Energy	$506,745,000
EE Muni	$116,920,000
B&I	$116,920,000
green bond	$4,336,430,000
Agri & Forests	$35,025,000
B&I	$1,339,285,000
Energy	$223,515,000
Transport	$321,095,000
Water	$2,417,510,000
QECB	$598,000,668
B&I	$598,000,668
Rail Muni	$603,180,000
Transport	$603,180,000

renewables	$1,545,835,000	
Energy	$1,520,700,000	
Waste	$25,135,000	
Grand Total	**$7,707,110,668**	

Figure 8: US Green Muni Bond proceeds broken down by type and sector. The labelled green bond sector is dominated by buildings and infrastructure (B&I) and water.

Since U.S. municipal bonds are issued by non-federal entities, the bonds were categorised according to which state they were issued in. This allowed us to see if any states were especially active in the climate-friendly muni bond market, which would indicate that their municipalities were taking an interest in projects that would improve their urban sustainability and resilience. Figure 9 shows that California (CA) is the most active state in the green muni bond market (labelled and unlabelled), followed by Massachusetts (MA) and Washington state (WA). If only labelled green bonds are considered, Massachusetts is the leader in that sector with $1.33 in bond issuance, followed by Connecticut (CT) and California.
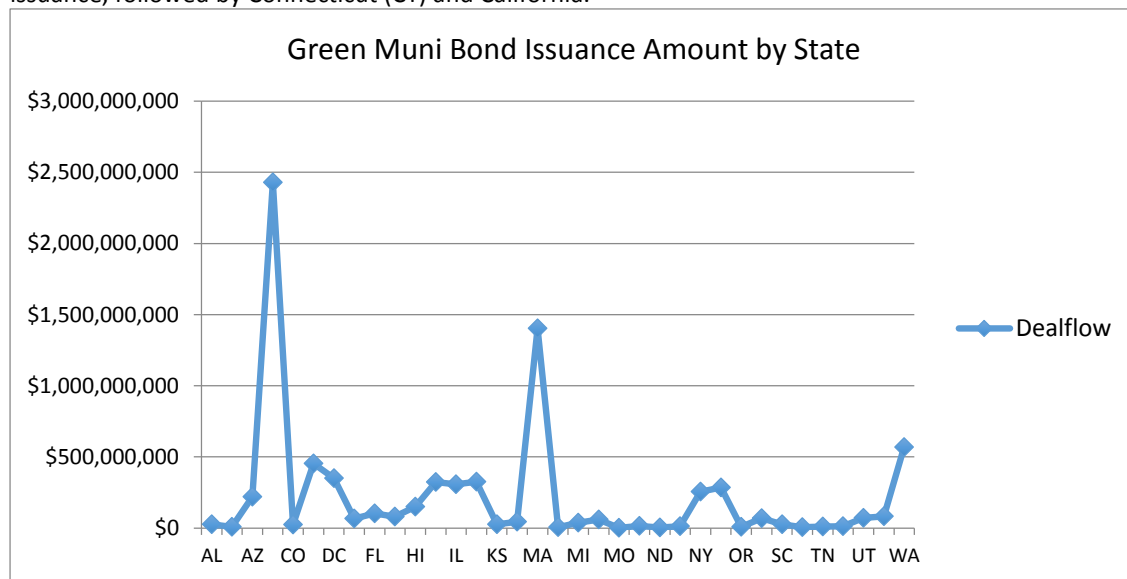

Figure 9: Amount of climate-related muni bonds issued by state. California, Massachusetts, and Washington are the three most active.

To use climate bonds as indicators for investments in the infrastructure and people per state, we divided the bond proceeds for each state by the state's population in order to determine the amount of bond issuance per capita for each state. The top ten states with highest bond proceeds per capital are shown in Figure 10. Washington D.C. is by far the leader, however this is because of two factors. Firstly, Washington D.C. is an autonomous city-state, rather than a full state, which means that there is a small geographic area with no rural catchment. Secondly, Washington D.C. actually only issued one green bond between 2007 and 2015, however this was a very large $350 million water infrastructure bond that is unique for both its size and its 100-year tenor. The next top three, which will be a more accurate portrayal based upon multiple bond issuances, are Massachusetts (MA), Connecticut (CT), and Hawaii (HI).
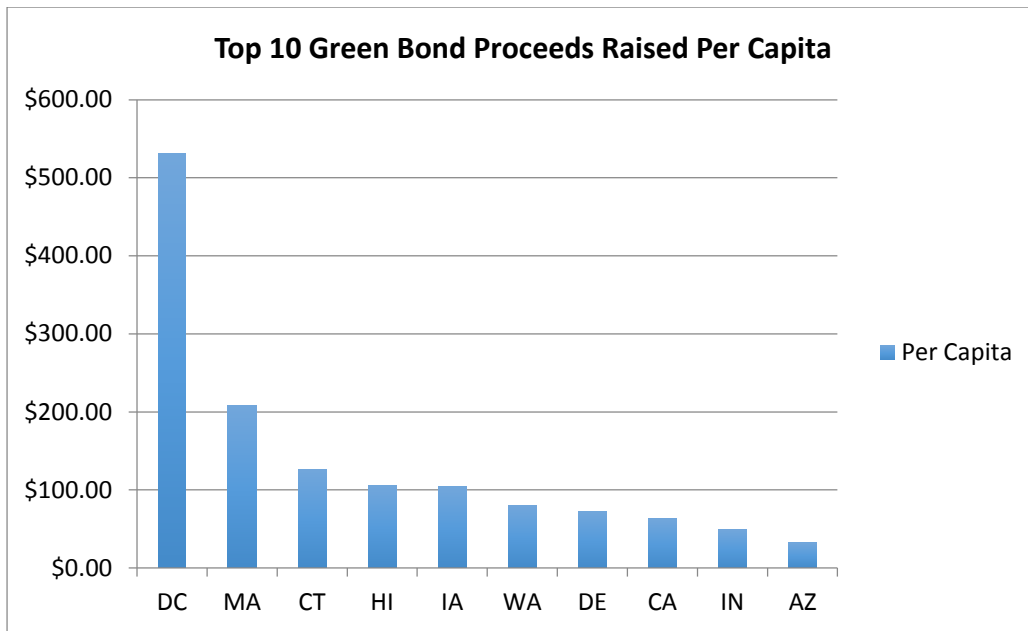
Figure 10: The top 10 highest green muni bond proceeds per capita.

In order to investigate whether climate and green bonds are a growing market segment, we tracked the number of relevant bond issuances per year. As Figure 11 shows, climate muni bonds in the U.S. are growing rapidly, so much so that the number of issuances in the first half of 2015 was almost double the number of issuances in total for 2014.
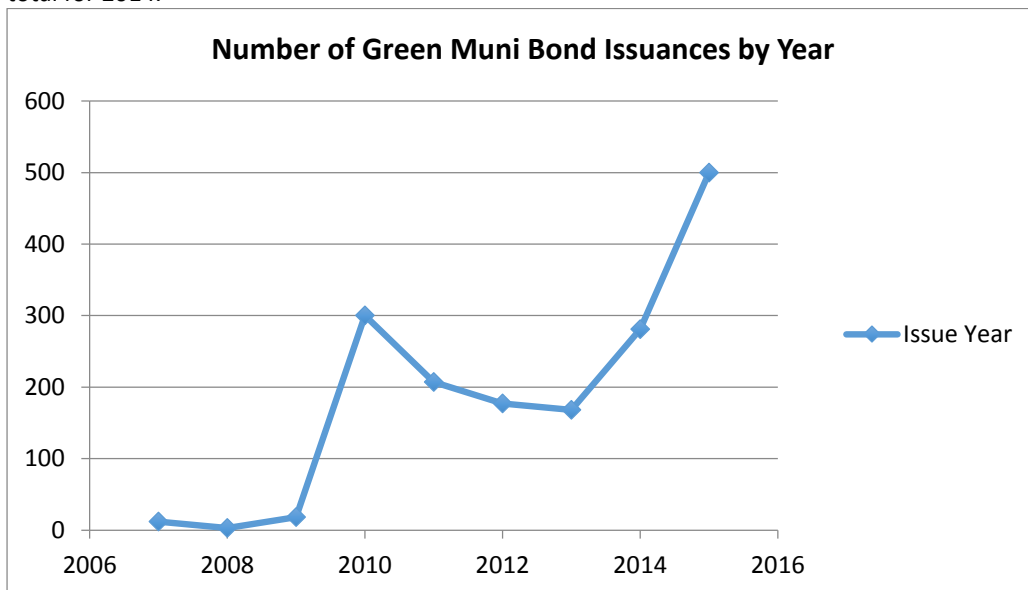
Figure 11: Number of climate and green bond issuances per year.

To take the international green muni bonds into consideration, we compared their amount and number of issuances against the total U.S. market. As shown in Figure 12, despite their low number of issuances, the international green municipal bonds are 32% of the size of the U.S. climate bond market segment. The international climate sub-sovereign bonds tend to be issued at greater size, so that this impact was accomplished with only 11 bond issuances compared with 1,419 smaller muni bonds in the U.S.

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Figure 12: International green muni bond issuance amount compared with total US green muni bond issuance. The international bonds are already a third of the size of the US with only 20 bonds issued as opposed over 1000 issuances in the US over the same time period

Discussion and Conclusions

There are many positive factors that are currently fostering the adoption of green muni bonds as a way of raising capital for urban infrastructure all ov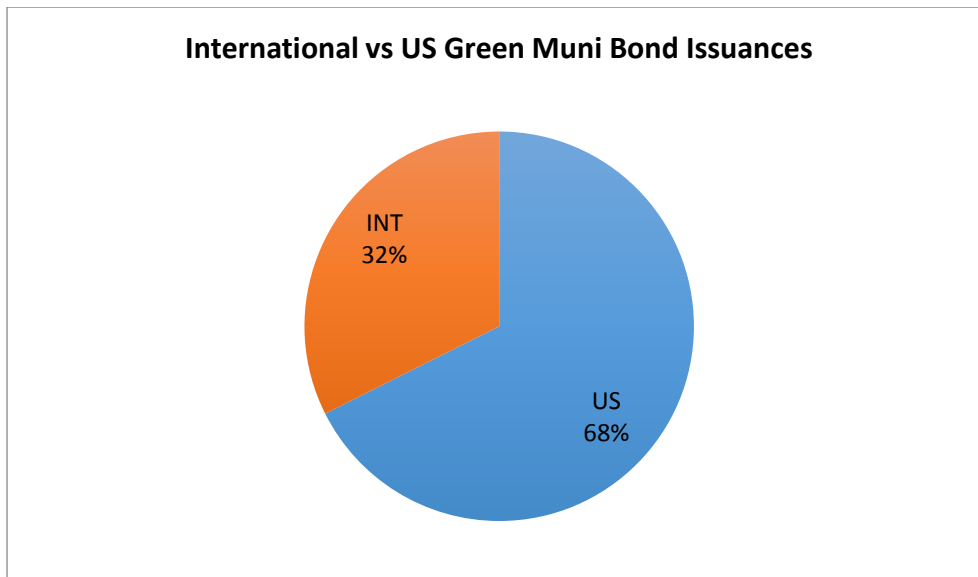er the world. New banking regulations require a more diverse mix of assets to be held by institutional investors, which is opening the door to diversification into green muni bonds. There is a trend for decentralisation of government structure and funding flows throughout Europe, which is encouraging local regions and cities to take control of their own finances.[23] At the same time, there is growing awareness about climate change which is leading to a rise in socially responsible investing (SRI) at all levels from personal to institutional, and the rise in labelled green bonds enables them to be easier for investors to find.

However, there are several factors detrimental to the adoption of widespread green muni bond financing in Europe, such as: Non-transparent secondary market and liquidity issues; an underdeveloped retail bond market; and lack of tax advantages.[24] On the issuer side, there is a lack of proven completions and data in general.[21] Green bonds in particular suffer from the additional burden of impact reporting requirements and due diligence, which adds to the costs of issuing. [25]

Regardless, European cities are starting to take the green bond opportunity. Gothenburg, Sweden has issued two green bonds in the past couple of years: the first in 2013 for SEK500 million, followed by a SEK1.8 billion issuance in 2014.[26] The Île-de-France region of France has also issued two green muni bonds, the first for €350 million, and the most recent for €600 million.[23] In April 2015, Transport for London issued a £400 million, ten-year green bond to finance climate-friendly projects such as hybrid buses and improved cycling facilities.[27]

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THE FINANCIAL VALUE OF INTERDEPENDENCY IN INFRASTRUCTURES

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1. Introduction

An infrastructure system provides a foundation for all economic activities within an economy. Returns and efficiency of infrastructure investment (Munnell, 1992) boost economic growth. As infrastructure sectors become increasingly interconnected and interdependent, new opportunities and benefits can be realised as added returns to infrastructure investment.

In this paper we quantify the financial value of investments in infrastructure sectors arising from their interdependencies through the use of an Input-Output (I-O) modelling approach.

2. Background

In economics, I-O models have been used in macroeconomic analysis at the regional and national level for many years. These models use a matrix to define the flow of homogeneous goods between various sectors within an

economy and hence uncover the interdependencies among them (Blitzer et al., 1957; Hawdon and Pearson, 1995; Lenzena et al., 2010). Due to their own unique interdependencies, the analysis of infrastructure presents a challenging modelling issue; in fact, Kroeger (2008), calls for a new perspective on infrastructures and their interdependence at national and international level in Europe. In this paper we consider an approach in line with Haimes et al., 2005a; Haimes et al., 2005b, whose I-O models of infrastructure interdependencies were introduced for the US economy. We use the I-O modelling approach because, to date, it is one of the most useful tools in economic impact analysis.

3. The Model

Let there be n infrastructure sectors in a country. These infrastructure sectors are assumed to be the producers and *endogenous* purchasers, providing goods and services to *exogenous* purchasers such as households, government and international trade, which form the external demand (Miller and Blair, 2009). If financial transactions between sectors i and j is m_{ij}, the total output of each sector i is x_i and the external demand for sector i's product is d_i, then:

$$x_i = m_{i1} + m_{i2} + \mathrm{K} + m_{in} + d_i, \; i = 1, \mathrm{K}, n. \tag{1}$$

If $\mathbf{x} = (x_1, x_2, \mathrm{K}, x_n)$, $\mathbf{M} = (m_{ij})$, $\mathbf{i} = (1, 1, \mathrm{K}, 1)$, $\mathbf{d} = (d_1, d_2, \mathrm{K}, d_n)$, then:

$$\mathbf{x} = \mathbf{Mi} + \mathbf{d}. \tag{2}$$

The matrix of technological coefficients, $\mathbf{A}$ with coefficients $A_{ij} = \dfrac{M_{ij}}{\sum_{j=1}^{n} M_{ij} + d_i}$, gives a unique solution to (2):

$$\mathbf{x} = (\mathbf{I} - \mathbf{A})^{-1} \mathbf{d}. \tag{3}$$

When all the sectors work at full capacity, the outputs are defined by equation (3). Next, assume that sector i has its production capacity/outputs reduced, as a direct or indirect consequence of internal factors (operational failure) or external factors (natural disasters, political instability, terrorism). In order to return production to full capacity, investment from an interdependent sector j is required. Sector j will invest only if it sees a financial return, which not only benefits the *affected* sector i, but is also beneficial to itself. We assume that the restoration occurs in the same time period as the internal or external failure causing the production reduction. Let ε_i represent the percentage of production for sector i.

The total output of i is:

$$O_i := \sum_j m_{ij} + d_i. \tag{4}$$

The total input of i is:

$$I_i := \sum_j m_{ji}. \tag{5}$$

The output changes by a factor of $\varepsilon_i : O_i \to (1 - \varepsilon_i) O_i$. The lost production for sector i: $\varepsilon_i m_{ii}$. The modified sales of sector i to itself: $m_{ii}' = m_{ii} - \varepsilon_i m_{ii} = (1 - \varepsilon_i) m_{ii}$. The total output for i (using the corresponding elements of matrix **A)**: $a_{ii} = \dfrac{m_{ii}'}{O_i'} \Rightarrow O_i' = \dfrac{m_{ii}'}{a_{ii}}$. The rest of the modified sector i row values: $m_{ij}' = \dfrac{m_{ij}}{\sum_{i \neq j} m_{ij}} \times \left(O_i' - d_i - m_{ii}' \right)$,

$j \neq i$. The rest of the modified sector i column values: $m_{ji}' = m_{ji} \times \dfrac{m_{ii}'}{m_{ii}}$, $j \neq i$. The modified total input: $I_i' = \sum_j m_{ji}'$.

Return on investment (ROI) is defined as (Nafukho and Irby, 2015; Ottersen, 2014):

$$\mathrm{ROI} := \frac{\text{Gain from Investment - Cost of Investment}}{\text{Cost of Investment}}. \tag{6}$$

The gains are obtained as:

$$G_j^i := \sum_{j=1, j \neq i}^{n} \left\{ \left(m_{ji} - m_{ji}' \right) - \left(m_{ij} - m_{ij}' \right) \right\}, \; j \neq i. \tag{7}$$

We define a coefficient that measures for each infrastructure sector i, the historical relationship between infrastructure output and investment. We assume that all other non-financial factors such as employment rate

remain fixed. This regression coefficient, β_i, serves as an investment-output index (Gruneberg and Ive, 2000; Wu et. al., 2007). The cost of investment is obtained as $(1+\beta_i) \times (\text{lost production})$[18]:

$$C_j := (1+\beta_i)\varepsilon_i m_{ii}, \ j \neq i. \tag{8}$$

Interdependent sectors willing to invest in the affected sector must have positive ROI values, thereby showing a positive *incentive to invest*. The rankings for sectors with this incentive are given by:

$$R_i = \underset{j}{\mathrm{sort}}\Big[(\text{ROI})_j \,|\, (\text{ROI})_j \geq 0 \Big]. \tag{9}$$

The key to our analysis is finding the strongest interdependency link between a pair of infrastructure sectors, which provides the highest returns to the investing sector. The corresponding interdependent infrastructure is formalised by:

$$k = \underset{j \neq i}{\mathrm{argmax}}\,(R_i). \tag{10}$$

4. The UK Infrastructure case

We analyse the case of the UK economy for the years 2002 and 2012. We focus on 11 infrastructure sectors of interest – Electricity, Gas, Water, Sewerage, Waste, Rail Transport, Land Transport, Water Transport, Air Transport, Telecommunications, and Information Services. The I-O table (Office of National Statistics data) is listed in the Appendix.

We assume the Sewage sector has a reduction of its capacity equal to 5%. With the model we can estimate which infrastructure is willing to invest on the sewage sector in order to re-establish the full capacity. Figure 13 shows that the Gas sector experiences the highest returns, exploiting its interdependency with the Sewerage sector. The gas and sewerage systems are highly interdependent within any nation. Modern day engineering solutions include renewable gas generation through sewage sludge using anaerobic digestion (AFECO, a specialist engineering services, products and solutions provider). This can demonstrate the link and thus potential gains to the Gas sector by acting as an investor in the Sewerage sector. We have observed that although the ROI curves retain the same shape over a 10-year period, the returns in 2012 have more than doubled since 2002. This is a very interesting result, as it shows that the increased production capacity and increasing output can result in an increased ROI. Therefore, the infrastructure sector are more likely to invest in the interdependent sectors now than they would have been 10 years ago. However, we also notice that the Waste and Electricity sectors continue to experience negative returns, and hence are not suitable investors for the Sewerage sector. As the percentage of loss of production increases, it becomes more difficult to find investors, particularly if ROI starts to approach zero, which is plausible, since relatively substantial losses in infrastructure sectors will generally require government intervention or a complete overhaul of products/services.[19]

Figure 13. A comparison between the 2012 and 2002 ROI in the Sewerage sector when it loses between 1% and 5% of its production capacity

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[18] Note that this is obtained by assuming all other factors relating to production of total output remain constant, for example, employment rate, efficiency, etc. The investment taken into account here includes fixed, working and financial capital for each sector.

[19] ROI curves and comparisons for the remaining sectors can be found at http://www.ucl.ac.uk/qaser/research/Projects_in_Progress/icif

Sewerage 2012

ROI

Epsilon-values (%)

Elec. — Gas — Water — Waste — Rail T. — Land T. — Water T. — Air T. — Telecom. — IS

Sewerage 2002

ROI

Epsilon-values (%)

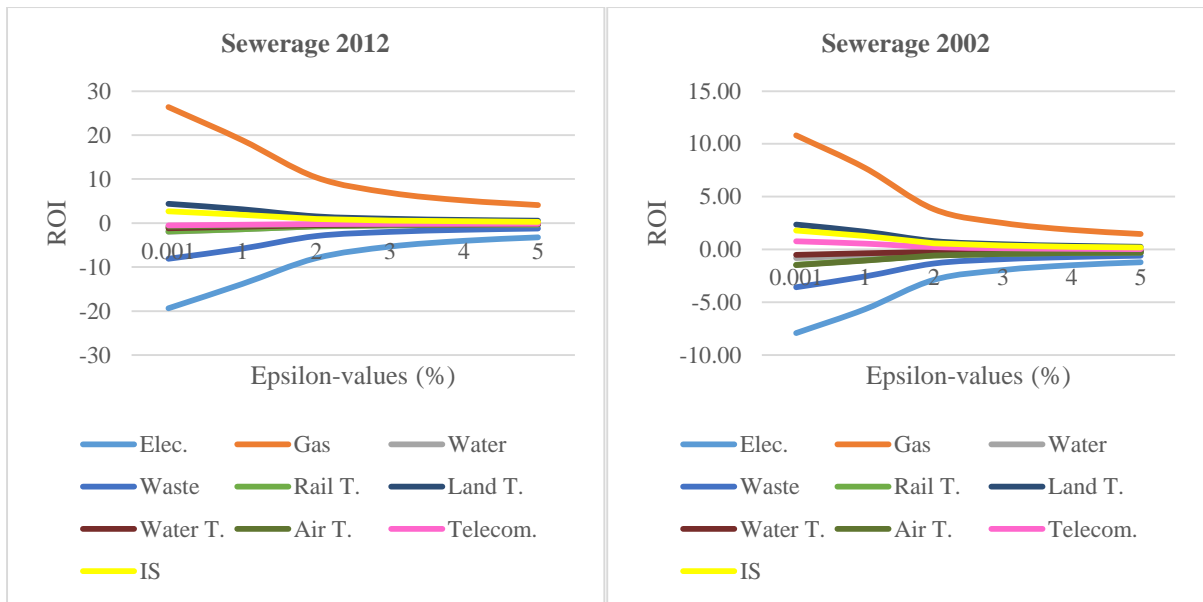Elec. — Gas — Water — Waste — Rail T. — Land T. — Water T. — Air T. — Telecom. — IS

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Table 5. Rankings for the sectors investing in each of the affected sectors that have lost 1% production capacity, UK, 2012.

Sewerage

Sector	ROI (1%)
Gas	208.35
Land T.	31.29
IS	18.86
Telecom.	-3.76
Air T.	-5.80
Water T.	-8.31
Rail T.	-13.65
Water	-13.97
Waste	-57.95
Elec.	-158.35

Electricity

Sector	ROI (1%)
Waste	124.05
Gas	53.35
Air T.	32.20
Land T.	26.29
Water T.	25.69
Water	11.03
Sew.	-5.35
IS	-9.14
Rail T.	-51.65
Telecom.	-159.76

Gas

Sector	ROI (1%)
Sew.	77.71
Land T.	34.84
IS	20.04
Air T.	-4.84
Water T.	-7.80
Telecom.	-10.32
Water	-14.48
Rail T.	-16.64
Waste	-57.28
Elec.	-170.48

Water

Sector	ROI (1%)
Gas	241.44
IS	18.04
Waste	-16.28
Water T.	-16.80
Land T.	-19.16
Air T.	-27.84
Rail T.	-43.64
Telecom.	-51.32
Elec.	-84.53
Sew.	-88.52

Waste

Sector	ROI (1%)
Sew.	297.15
Gas	226.44
Water	155.52
Land T.	34.84
IS	20.04
Air T.	-4.84
Water T.	-7.80
Telecom.	-10.32
Rail T.	-16.64
Elec.	-170.48

Rail Transport

Sector	ROI (1%)
Land T.	201.84
Gas	194.35
Sew.	75.05
Telecom.	5.24
Elec.	-20.40
IS	-22.14
Water	-36.97
Water T.	-97.31
Air T.	-128.80
Waste	-276.71

Land Transport

Sector	ROI (1%)
Gas	212.21
Telecom	170.75
IS	35.25
Waste	26.06
Rail T.	13.94
Sew.	13.65
Air T.	-2.91
Water	-6.26
Water T.	-16.93
Elec.	-147.74

Water Transport

Sector	ROI (1%)
Rail T.	87.31
Land T.	50.33
IS	29.25
Sew.	12.74
Waste	12.35
Gas	10.46
Telecom	9.18
Elec.	-1.47
Air T.	-1.91
Water	-6.26

Air Transport

Sector	ROI (1%)
Telecom	54.15
IS	23.46
Gas	20.92
Sew.	11.73
Water	6.27
Waste	2.41
Water T.	-9.58
Elec.	-13.90
Land T.	-17.98
Rail T.	-74.49

Telecommunications

Sector	ROI (1%)
IS	148.08
Elec.	75.11
Air T.	60.18
Gas	12.53
Water T.	-3.69
Rail T.	-5.28
Land T.	-19.34
Water	-21.69
Waste	-47.86
Sew.	-119.65

Information Systems

Sector	ROI (1%)
Elec.	31.33
Gas	-23.93
Water	-21.69
Sew.	1.13
Waste	-0.59
Rail T.	0.21
Land T.	-2.15
Water T.	-369.25
Air T.	15.04
Telecom.	19.74

5. Conclusion

In this work we have quantified the financial value of investments in infrastructure sectors arising from their interdependencies through the use of an Input-Output (I-O) modelling approach.

Our model based on I-O analysis has been instrumental in calculating the financial value of the potential gains from investment in interdependent infrastructures. The rankings based on the ROI methodology can be considered in infrastructure investment policy decisions thus helping in the selection of an interdependent sector with the highest returns.

The limitations of the model include linearity and simplified assumptions such as heterogeneity of infrastructure sectors. There is also an evident lack of detail regarding how the investment should be used within a particular infrastructure sector, a detailed microeconomic analysis would help in this aspect. Further analysis can include considering simultaneous investments by two or more sectors, modelled in a more complex manner.

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Table 6. Inter-industry sales matrix for the chosen 11 sectors in the UK economy, for the year 2012, values in £ million.

	Elec.	Gas	Water	Sew.	Waste	Rail T.	Land T.	Water T.	Air T.	Tele.	IS	Econ.	Demand
Elec.	27745	2372	397	31	69	213	256	45	85	310	36	18329	15069
Gas	7893	2620	19	11	21	27	63	9	24	45	2	11325	14919
Water	33	15	17	3	62	0	9	0	1	4	0	1655	4586
Sew.	5	1	6	912	263	3	13	6	6	9	2	1399	4542
Waste	10	4	12	402	4373	12	60	24	54	46	3	6527	11903
Rail T.	1	0	0	0	7	10	1	1	0	2	1	1591	7825
Land T.	12	6	7	41	1407	52	1081	22	34	210	19	30582	13182
Water T.	1	2	0	1	29	12	17	2516	29	24	0	1800	14546
Air T.	2	4	0	3	97	20	77	63	693	95	11	7339	20446
Tele.	58	14	23	59	79	27	254	72	103	4108	38	19518	24808
IS	36	10	0	0	0	38	164	43	132	215	62	7323	1233
Econ.	27409	12667	1559	892	6927	6021	20965	7508	9442	16927	2793	1170883	2057529

Table 7. Sector-wise total input, output, and β-values for the UK economy, 2012, values in £ million.

	Elec.	Gas	Water	Sew.	Waste	Rail T.	Land T.	Water T.	Air T.	Tele.	IS
Input	35796	5048	481	1463	6407	414	1995	2801	1161	5068	174
Output	46628	25653	4730	9542	11926	10716	15813	15772	21511	29643	1933
Beta-values	0.13358	0.43091	1.04396	0.96999	0.34922	0.92633	0.23747	0.64655	0.62068	0.20068	1.12833

FISCAL POLICIES, RISK SHARING AND REDISTRIBUTION AMONG ITALIAN REGIONS

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Extended abstract

The aim of this paper is to investigate the role of public policies in Italy over a long time horizon, by providing an assessment of fiscal and regional policies in terms of redistribution and income shocks absorption. The economic literature has already recognized the peculiarity of the Italian case with respect to this issue (Dedola *et al.* 1999; Asdrubali *et al.* 1996; Decressin 2002; Cavaliere *et al.* 2006; Arachi *et al.* 2010) due to large interregional economic disparities and redistribution policies pursued by central government. Nevertheless, empirical evidence is still limited and the topic remains under-investigated as compared to other countries.

We aim to shed new light on the assessment of the impact of fiscal and regional policy on regional risk sharing and redistribution looking at two different periods: 1951-65 and 1983-92. The interest in these years is motivated by their heterogeneity with respect to the nationwide economic cycle and the degree of regional convergence. From late 1950s to the early 1970s, a relatively long period of substantial regional convergence

takes place. These are the years of the so-called Italian economic miracle. The 1980s are years of lower national growth and increasing regional differentials. The two aforementioned periods also embrace different seasons of both redistributive and regional policies, this being of great interest for the topic under investigation. The main gap in the literature is that no quantitative assessment is available for the 50's and the 60's, the years of the so-called Special Aid Program for the development of the Mezzogiorno. We will provide such an evidence for the first time and this will also allow to provide a more general result not restricted to the Italian case.

We employ several sources (mainly Tarquinio, 1969 as adjusted by Giannola et al., 2014) to construct data between 1951 and 1965. For the 1983-92 period the data source is ISTAT (1996). Along with the estimation methods provided by the original work by Bayoumi and Masson (1995) and Mèlitz and Zumer (2002), we employ a more complex panel FGLS estimation which allows accounting for heteroscedasticity and serial correlation.

Between 1983 and 1992 interregional redistribution occurred almost exclusively through current expenditure, which implies that it mainly served the purpose of consumption rebalancing, with little room for investment financing. Two main issues emerge from results. First, a clear increase from the first (1951-1965) to the second period (1983-92) seems to occur in the size of interregional redistribution. Secondly, the importance of current expenditure seems to strongly increase moving to 1983-92, while the role of capital expenditure is negligible or even counter productive for redistribution. Conversely, in 1951–65 capital expenditure is responsible for a high proportion of interregional redistribution.

As far as risk sharing is concerned, between 1983-92 the capital component of public expenditure seems to play a perverse role by amplifying shocks. Things significantly change when the focus moves to 1951–65. In this case, three points are remarkable: i) the fiscal policy performs its risk-sharing function to a limited extent; ii) public current expenditure has an even smaller impact on risk sharing than total primary expenditure, i.e. even risk-sharing is carried out through public investments; iii) current expenditure has a larger impact on risk sharing than on long-run redistribution, which is mainly operated through capital expenditure, i.e. through policies aimed at strengthening the productive capacity of lagging regions.

We discuss our results in the light of three major policy changes occurred between the two considered periods.

First, the escalation of public spending at the national level and its changing mix show a clear decreasing pattern of the share of capital to total expenditure in Italy (Ministry of Economy and Finance, 2011).

Second, the institutional break connected to the establishment of Administrative Regions. Since mid-1970s an overhaul of local government financing system occurs with the centralization of revenues from municipalities to the national government and the establishment of Regional Governments, involving a strong decentralization of expenditure (in particular health and transportation expenditures). As a consequence, the weight of local administrations' expenditure remarkably increases. The institutional break connected to the establishment of Regional Governments is probably among the causes of the escalation of public expenditures and deficit. A wide literature has proved that the blend of decentralized expenditure decisions and a centralized financing might be highly detrimental for fiscal discipline.

Third, the process of decentralization of expenditure responsibilities went beyond the "ordinary" administration of public services, also involving the design and financing of regional policies. In particular, law n. 853 in 1971 and law n. 183/1976 gave the Regions the opportunity to take part to the design of regional policies. These measures implied a change of the national and unitary approach to public intervention. The process of decentralization of regional policies was finalized by law 64 in 1986 which gave major responsibilities to regional governments (now in charge of formulating, coordinating and implementing development projects and programs). The new legislation approved in 1986 (Law 64) meant a switch to a new policy regime prioritizing new domains of interventions: local entrepreneurial capabilities, human capital and technological innovation. From the organizational viewpoint, the model of intervention changed from the centralized model of the Special Aid to a decentralized model introducing major responsibilities to regional governments in designing, coordinating and implementing policies.

This was the consequence of a more general change in the regional policies' regime (supply side interventions vs demand-targeted measures) which implied a new composition of public spending allotted to Southern regions. Regional and development policies in the first period were driven by the Special Aid Program leading

Mezzogiorno to start industrialization and significantly reduce its development gap. The policy stance was characterized by centralized (at a national level) governance and a strong supply-based approach, typically following a top-down pattern, and pursuing the objectives of modernization and industrialization of Southern regions, as well as their integration, within an industrial national strategy. In the 1950-1957 period, the Mezzogiorno National Agency implemented a "pre-industrialization" strategy, in 1957 the Government gave the new mandate to the Agency to manage an "active industrialization" process. The core of the first phase of the "Intervento Straordinario" (Special Aid) was an extensive plan of public works with a threefold objective: to create primary infrastructures; modernizing and enhancing productivity in the agricultural sector (implementing an agrarian reform); creating a more favorable environment for the localization of industrial activities. In 1957 the phase of exogenous industrialization of Southern regions started. As a result of the intervention, an intense process of accumulation took place largely due to the localization in the area of large (and mainly state-owned) manufacturing plants in heavy industry. This period is known as the golden age of Mezzogiorno industrialization of exogenous origin and based on large scale production. The regional policy scenario radically changed in the second period covered by our estimations. These were the years of the transition from the "Intervento Straordinario" (formally abolished in 1992), to the so-called "Ordinary intervention targeted to all underdeveloped territories in the country". As this new model of intervention took place, local government gained expenditure responsibilities (as mentioned above), and regional policies progressively switched from supply side interventions to demand-targeted measures (fiscal subsidies to firms, income support for households and job creation measures in the public sector). Such a shift implied an increase in the share of current public expenditures.

Although based on Italian data, the evidence provided in this paper allows us to draw a general conclusion not restricted to the Italian case. The general result stemming for our results is that when assessing the regional risk-sharing and redistributive power of national fiscal policies, one should carefully take into account many different factors related to the existing policy regime, the main being the composition of public spending.

Keywords: risk sharing, regional redistribution, fiscal policy

JEL codes: H50, H70, H72, R10.

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SPATIAL PATTERNS OF THE MANUFACTURING INDUSTRIES' DEVELOPMENT ACROSS REGIONS OF RUSSIA IN THE 1990-2010S: INCREASING INEQUALITY OR IMPROVING EFFICIENCY?

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Having lost ca. 6 million jobs during 1991-1998 and some key science-intensive industries such as manufacture of machinery, the Russian industrial sector turned one of the biggest winners from the 1998 financial crisis due to the national currency devaluation. The mining sector, low and later medium-tech manufacturing were among key driving forces behind the Russia's economic revival during 1999-2007. However, the structural adjustment in the manufacturing sector resulted in the additional loss of more than 3.2 million jobs over this period. Contrary to 1998, the 2008-2009 economic crisis hit the manufacturing sector hard triggering a 15% contraction and new massive job cuts exceeding 800 thousand only in 2009 while also pushing companies for further optimisation. The lack of high-tech manufacturing coupled with the considerable loss of manufacturing jobs posed recently a question about a new industrialisation as a pre-requisite for the modernisation of the Russian economy.
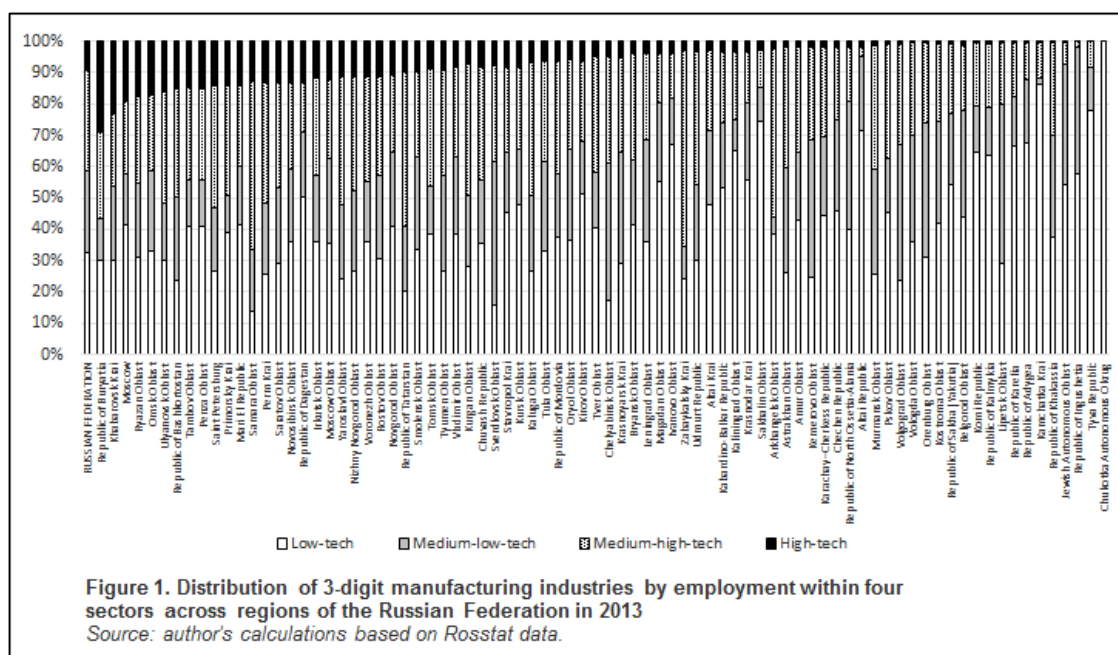
This paper seeks to explore and map spatial patterns of the transformation of manufacturing industries and reveal trends in their specialisation, (de)concentration, and productivity change. The data we used for our study covers 102 out of 103 three-digit level manufacturing activities[20] in the Russian Classification of Economic Activities (OKVED)[21] in the period of 2002-2013 across all 83 regions of the Russian Federation according to its administrative division as of 2013. Further, we adapted the OECD and EUROSTAT aggregations of industries with respect to their technological intensity[22] to the OKVED classification by dividing all 102 manufacturing activities into low-tech sector comprising 38 three-digit activities, medium-low-tech (26 industries), medium-high-tech (31 activities) and high-tech sector, in which seven manufacturing activities were allocated.

In 2002 from 10.8 million manufacturing jobs in the Russian economy as a whole ca. 43% of jobs were in the medium-high-tech (36%) and high-tech (7%) sectors while low-tech and medium-low-tech sectors employed 34% and 23% of the manufacturing labour force, respectively. By 2013 all sectors experienced massive job cuts ranging from 1.3 million in medium-high-tech and 1.1 million in low-tech sectors to 458 thousand in medium-low-tech and 77 thousand in high-tech sectors. As a result, 41% of Russia's manufacturing jobs as of 2013 remained in medium-high-tech and high-tech activities with 30 regions having 41% and more jobs in these sectors and nine regions having over 50% of jobs in medium-high-tech and high-tech sectors (Figure 1).

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[20] We shall further use notions "manufacturing activities" and "manufacturing industries" interchangeably.

[21] Rosstat does not provide data for an activity "29.6 – Manufacture of weapons and ammunition", and therefore we excluded this manufacturing industry from our analysis.

[22] Hatzichronoglou, Thomas. (1997). "Revision of the High- Technology Sector and Product Classification", OECD Science, Technology and Industry Working Papers, 1997/02, OECD Publishing; EUROSTAT. (2015). High-tech classification of manufacturing industries. EUROSTAT. Retrieved 28 March 2015 from http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:High-tech_classification_of_manufacturing_industries.

Figure 1. Distribution of 3-digit manufacturing industries by employment within four sectors across regions of the Russian Federation in 2013
Source: author's calculations based on Rosstat data.

There was no single geographical pattern in manufacturing jobs' dynamics in four identified technological sectors (see Figures 2-5). This can be explained, on the one hand, by different industrial structures inherited from the Soviet planned economy and preserved over the 1990-2010s (for instance, the specialisation of regions of the Central-Black Earth macroregion in agribusiness, i.e. low-tech sector, and of the Ural macroregion – in heavy industries and medium-high-tech manufacturing). On the other hand, some regional governments implemented active policies aimed at FDI and local investors' attraction that played a crucial role in the manufacturing development. Such regions as Kaluga, Ulyanovsk, Leningrad, Moscow oblasts and th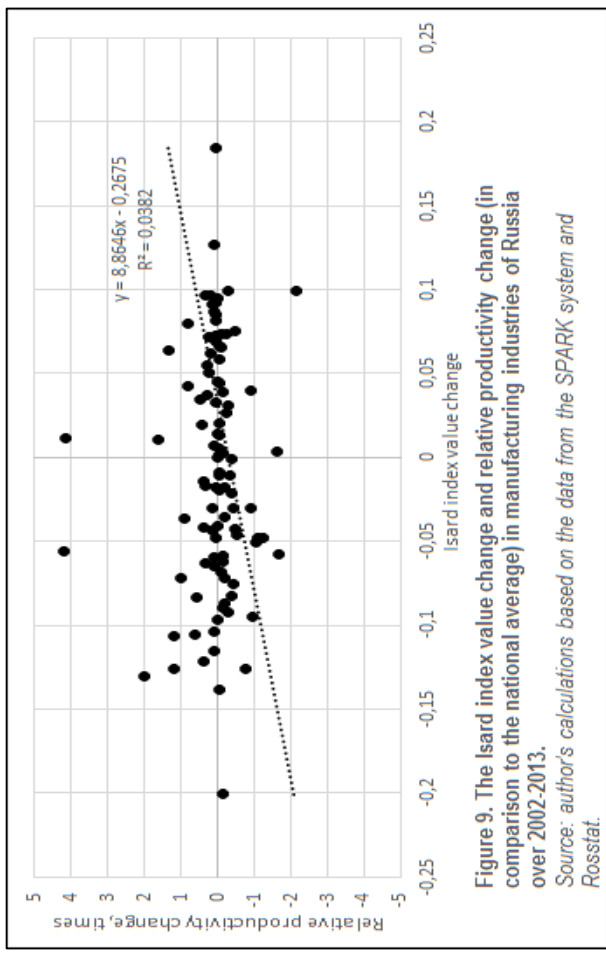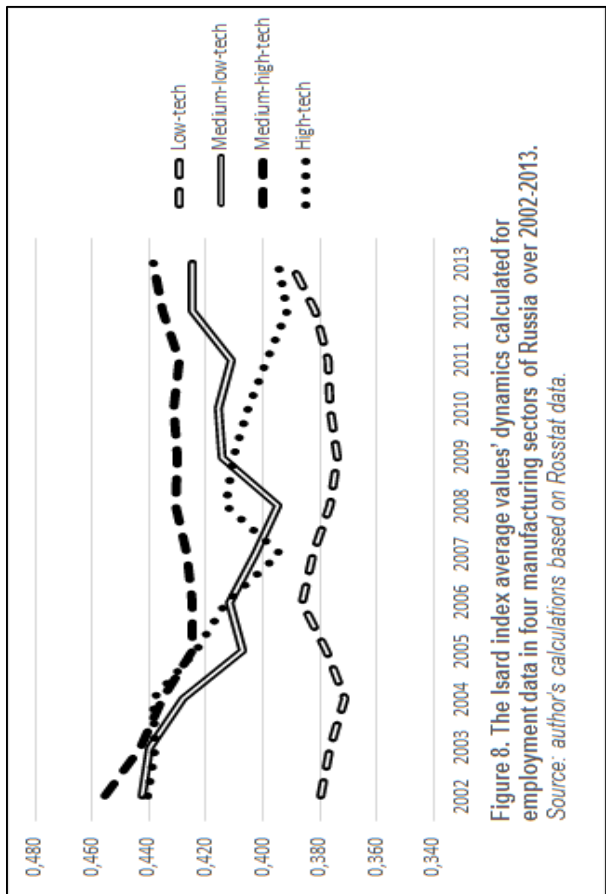e Republic of Tatarstan, to name a few, belong to this category, and their rapid industrial development stood clearly out when we looked at overall changes in the manufacturing employment at the regional level measured by the dynamic shift-share analysis[23] through the "local shift" component (see Figure 6).

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[23] Dunn, Jr. Edgar S. (1960). "A statistical and analytical technique for regional analysis", Papers and Proceedings of the Regional Science Association, Volume 6, pp. 97 -112; Barth, Richard A., Knight III, Prentice L. (1988). "Dynamic shift-share analysis", Growth and Change, Volume 19, Issue 2, Spring 1988, pp. 1-11.

Figure 2. Change in regional low-tech manufacturing employment share of total low-tech manufacturing employment in Russia over 2002-2013.
Source: author's calculations and mapping based on Rosstat data.

Legend (Figure 2):
- Less than -.0040
- -.0040 - -.0030
- -.0029 - -.0020
- -.0019 - -.0010
- -.0009 - .0001
- 0
- +.0001 - +.0010
- +.0011 - +.0020
- +.0021 - +.0030
- More than +.0030

Figure 3. Change in regional medium-low-tech manufacturing employment share of total medium-low-tech manufacturing employment in Russia over 2002-2013.
Source: author's calculations and mapping based on Rosstat data.

Legend (Figure 3):
- Less than -.0030
- -.0029 - -.0020
- -.0019 - -.0010
- -.0009 - .0000
- 0
- +.0001 - +.0010
- +.0011 - +.0020
- +.0021 - +.0030
- +.0031 - +.0040
- More than + .0096

Figure 4. Change in regional medium-high-tech manufacturing employment share of total medium-high-tech manufacturing employment in Russia over 2002-2013.
Source: author's calculations and mapping based on Rosstat data.

Legend (Figure 4):
- Less than -.0060
- -.0059 - -.0045
- -.0044 - -.0030
- -.0029 - -.0015
- -.0014 - .0001
- 0
- +.0001 - +.0015
- +.0016 - +.0030
- +.0031 - +.0045
- More than +.0046

Figure 5. Change in regional high-tech manufacturing employment share of total high-tech manufacturing employment in Russia over 2002-2013.
Source: author's calculations and mapping based on Rosstat data.

Legend (Figure 5):
- Less than -.0045
- -.0045 - -.0030
- -.0029 - -.0015
- -.0014 - .0001
- 0
- +.0001 - +.0015
- +.0016 - +.0030
- +.0031 - +.0040
- +.0041 - +.0060
- More than +.0060

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Figure 7. Productivity level change in four manufacturing sectors of Russia relative to the national average taken for 1.0 over 2002-2013.
Source: author's calculations based on the data from the SPARK system and Rosstat.

Figure 9. The Isard index value change and relative productivity change (in comparison to the national average) in manufacturing industries of Russia over 2002-2013.
Source: author's calculations based on the data from the SPARK system and Rosstat.

Figure 6. Local shift as a share of total manufacturing employment in regions of Russia over 2002-2013.
Source: author's calculations and mapping based on Rosstat data.

Figure 8. The Isard index average values' dynamics calculated for employment data in four manufacturing sectors of Russia over 2002-2013.
Source: author's calculations based on Rosstat data.

While we identified clear diverging trends in terms of change in regional manufacturing employment shares, at the same time we observed a steady convergence in terms of manufacturing productivity[24] across all considered regions. The range in regional productivity levels relative to the national average between the worst and the best performing region decreased from 11.1 times to 2.5 times, and the standard deviation of relative regional productivity levels dropped from 1.26 to 0.46 during 2002-2013. The same general direction, albeit with several deviation, was revealed across 102 manufacturing industries where the range in relative productivity levels narrowed from 30.4 to 8.5 times, and the standard deviation dropped from 3.3 to 1.3 over the same period of time. This converging trend provided clear evidence that job cuts were performed in the first row in those regions and manufacturing sectors that were not able to adapt well to the market economy.

Two sectors contributed the most to the overall productivity growth. The first major contributor was the medium-low-tech sector comprising *inter alia* manufacture of refined petroleum products and several metallurgy sub-industries. It remained the only sector with the productivity level above the national average; its productivity was 41% higher in 2002, and by 2013 it was already 49% above the national average. The second contributor was the medium-high-tech sector that managed to catch up considerably with its productivity level increasing from 76% of the national average in 2002 to 92% by the year of 2013. It is worth mentioning that four different medium-high-tech activities (manufacture of agricultural and forestry machinery, of transport equipment and of pesticides and other agrochemical products) topped the ranking of all 102 industries by their absolute productivity increase. Other two sectors' performance did not only remain below the national average, but also deteriorated in relative terms (see Figure 7).

To measure the degree of spatial concentration we calculated the Isard index reinvented by Krugman[25] using employment data for 102 manufacturing activities that allowed us to reveal slight de-concentration trends over 2002-2007 in all four major sectors, while after the 2008-09 financial crisis no single trend could be identified (see Figure 8). Also no evidence was found that more concentrated industries in 2002 became even more concentrated (only negative correlation was found between the Isard index change and its initial values as well as with employment change). However, there was a weak positive correlation (at the level of 0.20) between the Isard index value changes across manufacturing activities and changes in their relative productivity (see Figure 9).

"MIND THE GAP!" ANTICIPATORY RESPONSES TO REDUNDANCY IN THE WELSH NUCLEAR POWER INDUSTRY

Alexandra Plows and Tony Dobbins Bangor University, United Kingdom

This paper presents emerging findings from a qualitative research project (2013-15) examining stakeholder and worker responses to the forthcoming closure of Wylfa nuclear power station on the island of Anglesey, North Wales, a peripheral rural region with a depressed labour market facing the pressures of de industrialisation. The decommissioning timeline has stretched considerably; originally anticipated in 2012, it is now shutting down energy production in December 2015, with a cohort of approximately 300 workers (out of around 600) who will be made redundant in April/May 2016. Exact numbers of redundancies are still under negotiation. While the closure has been long anticipated, this does nothing to mitigate the 'future shock' to an already depressed local labour market.

The research focus was to identify what anticipatory measures were/are being undertaken by stakeholders and workers in the run up to these long-forecasted redundancies; tracing 'demand side' and 'supply side' interventions by local 'Labour Market Intermediaries' (Autor 2008). This paper provides a narrative account of these interventions and related key findings. While there are encouraging signs that long term prospects for Anglesey are good, in the short to medium term, the Wylfa workforce will be entering a depressed local labour market with few large employers left with the capacity to hire them. They will have to *"mind the gap"* in the local labour market; and the significant time gap between redundancy and new initiatives coming on stream.

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[24] In this paper we measured productivity as output in Russian roubles (RUB) per person employed (data on permanent employment only was available and used in this study).
[25] Krugman, Paul R. (1991). Geography and Trade. Cambridge, MA: MIT Press.

Our research is informed by a critical examination of whether conventional supply-side Human Capital Theory (HCT) responses (Becker 1976) are adequate for anticipating and dealing with understanding and adjusting to deindustrialization and associated labour market unpredictability in regional economies like North Wales. Keep and colleagues (Keep *et al.,* 2010; Keep & Mayhew, 2010; Mayhew & Keep, 2014) observe that while higher skill supply is important, ensuring there is actual demand for using skills (and in decent jobs) has been neglected.

Background: Anglesey's labour market
Anglesey has been undergoing a process of de industrialisation. The redundancies at Wylfa are coming close on the heels of loss of another major local employer; the closure of Anglesey Aluminium (AA) in 2009, resulting in over 500 redundancies in the midst of the recession. We found ex AA workers who stayed in the region were mostly having to 'make do and mend' (Dobbins and Plows 2014a) – and take low paid, short term work. These large scale losses (and the 'multiplier effect'- the knock on effects down the supply chain) are even more significant in a region with very few medium to large employers, with the vast majority (76.5%, June 2015: source, InfoBase Cymru) being micro businesses employing 0-4 people.

> *…We don't have many large, well-paid employers on the island outside of the public sector…Wylfa remains one of the few*[large employers] *…in that middle part* [between micro businesses and large employers] *there's a very big gap*
("Iestyn", Anglesey Council)

> *I honestly don't think that local companies have the capacity* [to absorb the Wylfa redundancies]…
 ("Andrew", UNITE representative)

Unemployment on Anglesey at 6.7% in June 2015 is close to the Wales national average (6.8%. Source: InfoBase Cymru). However, official unemployment data does not show the whole picture and masks the fact that many people may be in work but underemployed or in low wage precarious employment. The region has a high percentage of jobs in the agriculture, tourism, forestry and fishing, production and wholesale, retail, transport, hotels and food sectors. Significantly, jobs in these sectors are often low paid, casualized, and seasonal; however developing quality tourism is a strategic economic target for the council.

Anticipatory Stakeholder Responses: Labour Market Intermediaries
Local stakeholders, (e.g. Anglesey council, local FE colleges, Magnox management), have been developing anticipatory strategies to the AA and Wylfa redundancies since the early 00's and these initiatives, programmes and emerging quasi institutions can be understood as "Labour Market Intermediaries (LMIs) . LMIs have been defined by Autor (2008:1) as:
> *'entities or institutions that interpose themselves between workers and firms to facilitate, inform, or regulate how workers are matched to firms, how work is accomplished, and how conflicts are resolved'.*
Arguably, the very existence of such LMIs demonstrates market failure and the limits of Human Capital Theory (Dobbins and Plows, 2014b). What was clear is that Anglesey stakeholders have been very proactive in addressing the 'future shocks' of mass redundancies. A 2006 report by Tribal Consulting, commissioned by Anglesey Council, set out the likely socio economic impacts of the closures of both AA and Wylfa, and formed the basis for strategic supply and demand side interventions. These interventions are discussed below.

 'Supply Side'
Local stakeholders successfully applied to the European Social Fund (ESF) to fund the *Shaping the Future* (StF) programme. This ran between 2012-15 with a remit to assist workers facing redundancy at Wylfa and Trawsfynydd (Gwynedd) nuclear plants. StF provided resources for these workforces, including career coaching and funds of up to £15 000 per worker, (including contract staff), to undertake qualifications and training which could bolster their chances of employment in the region post redundancy.

The short term impacts of StF are that an 'institutionalised' workforce became more savvy, and skilled up; with 480 new qualifications as a result of the programme. StF undertook some supply/demand side matching, through providing the workforce with information about regional opportunities and identifying relevant qualifications. Workers therefore undertook qualifications, for example, relating to the energy/renewables sector. The long term impact/legacy of the programme will necessitate follow up research. What is clear is that

StF did not, and was not equipped to, play a more expansive role in regional re (development); i.e. it could not influence whether demand-side opportunities actually came on-stream.

'Demand Side'

On the 'demand side', Anglesey council and other regional policymakers and stakeholders have been working on the 'Energy Island' strategy of attracting inward investment around energy, including renewables, biomass, and the new nuclear plant (Wylfa Newydd). These have been market-forces dependent; the timeline for all these demand-side interventions, particularly 'Wylfa Newydd', has stretched considerably, with some 'flagship' renewables projects falling by the wayside (the 'Rhiannon' offshore wind farm)[26], and with an anticipated ten years before 'Wylfa Newydd' becomes operational. Some important 'good news' stories include the recent (Oct 2015) announcement of 1 billion pounds of Chinese investment in a biomass plant on the old Anglesey Aluminium site, although this is not expected to open until 2018/2019[27].

Discussion

A key finding is the need to better coordinate supply and demand. StF as a classic HCT –informed 'supply side' training programme (Dobbins+ Plows 2014b) did aim to match skills/training to the work opportunities coming on-stream- but time delays in these big 'demand side' projects have affected its impact. Some workers undertaking courses in anticipation of the 'Rhiannon' windfarm, quit these courses due to Rhiannon's cancellation. Market uncertainty is adversely affecting peoples' skills/training decisions.

Additionally, new opportunities, subject to the vagaries of market forces, are not able to be coordinated with the timescales of mass redundancies. The time gap relating to "Energy Island" projects is key, and the issue is what people will do in the interim; move away or be forced to "make do and mend" (Dobbins and Plows ibid) like the AA workforce before them:

> There's nothing much available for people now, so having that increase [post redundancy at Wylfa] *will have a major impact… …It's going to be a difficult decade after Wylfa closes its doors… I think a lot of people will have to leave or travel to work…*

'Gethin' (STF support officer)

A recent local labour market summit organised by the authors[28] as a knowledge exchange event identified general consensus amongst key stakeholders that more needs to be done to the stimulate 'demand side' and have better supply/demand side 'matching'. "Energy Island", and a new initiative, "Cyfle", led by the North Wales Economic Ambitions Board, are strategic policy interventions aimed specifically at stimulating the demand side and, in the case of Cyfle, matching supply and demand.

Jobs *quality* is a key issue for all stakeholders -the challenges of a low paid and underemployed 'precariat', in Anglesey and across the UK as a whole; this issue emerged in interviews and was a key theme at the Labour Market summit. There are currently limited opportunities for re-employment in the local labour market which will enable the Wylfa workforce to use their existing skills and experience. This is another type of 'skills gap'. The challenges faced by those entering a precarious labour market are highlighted in the experiences of contract staff currently working for Magnox subcontractors, who are the most vulnerable and the least protected members of this workforce. These are mostly low paid, low skills jobs(cleaners, canteen staff); workers are generally not union members. Even though they were eligible for StF funding, they were not given time off for training by their employers. Neither are they eligible for redundancy support available to Magnox contract staff.

Conclusions: "watch this space"

There is a need to undertake research which traces the longitudinal impacts of mass redundancies, tracking the AA and Wylfa workforce and stakeholder interventions over time. This is an empirical 'black hole'. We aim to continue to develop our research and our knowledge exchange relationships with key regional stakeholders.

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[26] http://www.bbc.co.uk/news/uk-wales-north-west-wales-28580683
[27] http://www.bbc.co.uk/news/uk-wales-34571043

[28] http://www.wiserd.ac.uk/training-events/event/welsh-labour-market-summit-debating-interventions-match-skills-and-jobs/?eID=670#Date:18092015

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REGIONAL DEVELOPMENT AND COLLABORATION IN TOURISM - A CROSS BORDER PERSPECTIVE

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Abstract:
Regional development is dependent on the economic base of the region and new initiatives at local and higher level. In the peripheral areas tourism is sometimes an important potential for development. Tourism research - empirically - has been one way to look into potential development of regions falling behind in the old production structures. The partly unused infrastructure, buildings and small holdings can be developing assets for tourism activities.

The paper look into how the tourist sector in the northern coastal regions of Germany and southern Denmark try to combine the assets from the 2 regions and develop the potentials as well as look into reason for tourist to use the cross border area in different ways.

Research in tourism is a field where several disciplines have to collaborate to be able to understand the behavior and preferences of tourists, market strategy, economy and employment and contributions to regional development. It consists of many different types of economic activity, some mainly directed at tourists, others only partly orientated towards tourists, for example retail shops and construction sector.

Some of the tourist orientated activities are reasons for tourists to go to a place, such as a famous manor house or good beaches. Other tourist orientated activities are reasons to stay at a place, for example good restaurants or an interesting environment. Various types of tourist businesses are dependent on each other at a destination. If the destination is planning a marketing campaign, it is important for a destination to realize what may be the reasons to go to the destination and the reasons to stay, and to use this as a point for marketing.

Especially small destinations are often dependent on other destinations in the region, which is why we see local as well as regional organizations trying to manage and inspire to new tourist activities. In this article we present a discussion of management types in tourism, utilizing the results of 40 interviews with tourist businesses – 20 in Denmark and 20 in Germany – to understand the priorities and offers of the tourist sector. We also utilize nearly 1,300 interviews with passengers of the ferryboat between Denmark and Fehmarn to understand the travel patterns and priorities of the tourists.

Tourism Management and Cross-border Projects

In relation to the planning of a fixed link between Germany and Denmark, a new German-Danish cross-border region was articulated under the name of Fehmarnbeltregion. Various interpretations of the size of the geographic area of the Fehmarn Belt Region exist. The Regional Structure Fund Program (INTERREG) from 2009 involves Kreis Ostholstein, Hansestadt Lübeck and Plön on the German side of the Fehmarn Belt and Region Zealand on the Danish side of "Fehmarnbelt Region". In this article, when mentioning the Fehmarn Belt Region, this is the geographic area we refer to.

Map showing the two German-Danish cross-border regions:
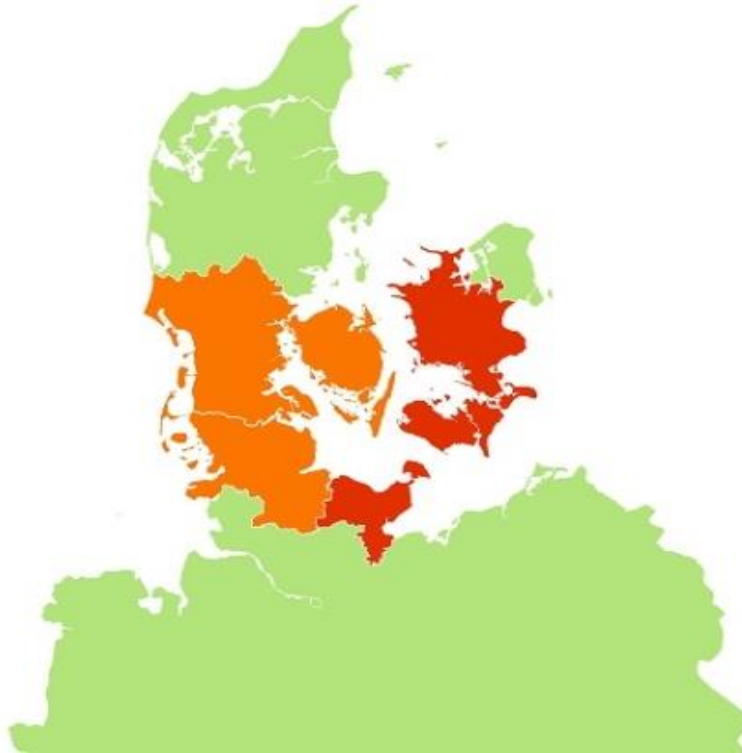
(Fehmarnbelt Region 2014)

In 2014 the INTERREG program "Fehmarnbelt Region" was merged with another INTERREG program; "Syddanmark-Schleswig-K.E.R.N.", involving Region Syddanmark, Stadt Flensburg, Stadt Kiel, Stadt Neumünster, Kreis Rendsburg-Eckernförde, Kreis Nordfriesland, Kreis Schleswig-Flensburg. (Fehmarnbelt Region, 2014) The Zealand route and the Jutland route between Scandinavia and Central Europe are thus gathered under one program as a combined German-Danish cross-border region. This region is still a region with two very different parts. A western part where the geographical structure allows for good possibilities for integrating Northern and Southern Schleswig in terms of tourism, labor market, educational activities etc., compared to the eastern part where the ferryboats have until now been the only provider of a daily connection between the German and Danish sides. Several of the cross-border regions in EU have a lot more connections and interrelationship than is the case, especially in the eastern part of, the Danish-German border region. In this eastern part there is, in spite of the language differences, great potential for increased collaboration and tourist exchange even now. The question is; will this collaboration in tourism, labor market, culture and education increase greatly, when the tunnel is introduced? Our perception is that an increased collaboration in the years to come, before the tunnel is finalized, is necessary to make a better and more intensive use of the costly fixed link arrangement. The tunnel in itself cannot create an integrated cross-border region; it must be created before, alongside the building process of the connection. (Palludan, 2013) And it will, even after the finalization, still be an ongoing process.

The construction of a region is often perceived as number of internal connections of trade, an integrated labor market, cultural exchange and often some common cultural, as well as other, identities. A region is never a stable and fixed entity, but changes and develops as a result of the activities of people living and working there, as well as a result of the regional connections with other regions. Politically defined regions are stable for a long or short time, with the national state as the most exclusive example, but even here we do know that they also change. (Hudson R. 2007 'Region and place : rethinking regional development in the context of global environmental

change.', *Progress in human geography.*, 31 (6). pp. 827-836.2006. Doreen Massey, 2006 "In what sense a regional problem?") They debate the concept of region and demonstrate how political regions are only one type of regions. Some cross-borders regions have been integrated by commercial and labor market integration as well by cultural integration. We have even seen cross-borders regions where locals have worked together across the borders and against the nation states. An extreme case was the farmers' cooperation across the border between Denmark and Sweden at the time when the south part of what is today Sweden belonged to Denmark and was also locally seen as Danish. But over a long period of time the Danish King and the Swedish king sent soldiers across the borders to capture new land or recapture lost land, resulting in a huge loss of goods for the local, poor farmers. Here we do know that there was written statement in 1505 from Blekinge Council (Danish at the time, before 1532) and from Småland's Council (Swedish), that the farmers on both side refused to fight each other when the Danish or the Swedish King sent soldiers across the borders locally to take goods and land on the other side. But the farmers accepted joining the army to fight further away in other countries. This Farmers' Peace Contract across the border is also explained in a guide book for south Sweden. (Dahl.S 1997). But only 28 years later, in 1532, Denmark had to accept that the southern part of Sweden was lost to Sweden forever. This is just to illustrate that political regions are not always supported at ground level. In other situations we have seen a lot of illegal trade going on between regions which were officially closed for exchange.

In 1997 a tunnel and bridge connection totaling 18 km between the 2 biggest islands in Denmark, Zealand and Fyn, was constructed. The bridge was to be paid by the users, the first infrastructure element in Denmark with this type of funding scheme. The various parts of Denmark were already strongly integrated in trade, labor market, family relations as well as common language and long time common historical development as a nation state. When the train connection was opened in 1997 and the bridge a year later, the bridge was very much used from day 1. It was simply a quicker way between regions already integrated. The bridge and train connection attracted many users as a very important internal connection in Denmark, between eastern and western Denmark. In a few years the traffic went up to 2½ times more cars, compared to the days with ferryboats. For train passengers, the traffic doubled. And for trains with goods it cut down the transportation time, because the trains did not have to be divided and rearranged on several ferryboats and then reconnected. This was an important scope for heavy long distance transport to Central Europe as well.

The opposite scenario was seen when the tunnel/bridge connection between Denmark and Sweden was opened a few years later in 2000. (A connection of 16 km, only a bit shorter than the bridge between Fyn and Zealand.) The traffic only slowly developed to the level it was estimated to reach, even though Denmark and Sweden have had a high degree of internal trade, cultural common relations and quite a number of Danes even have second home houses in Småland, only 2-3 hours' drive from the bridge. It took a long time to establish the Øresund Region concerning many types of connections. The Øresund Bridge was built mainly to integrate industries and manufacturing firms in the middle of Sweden with Central Europe, especially the German industries. Volvo top manager Pehr Gyllenhammar was a key person and European Round Table of Industrialists was a key organization in getting EU to support the idea and pay a large portion of the cost. Apart from this perspective, Copenhagen and Malmø viewed the bridge as a potential for integration between the two cities and hinterlands and the marketing of a large region. A region which could more easily be made attractive for international investment, in competition with other cities in Europe. Today traffic is a bit better than the estimate and the branding of the Øresund Region seems to work and people in the region do use the other side of the regions for visits, even if it does cost €40 for a car to pass and return. But traffic by car on the Øresund Bridge is only half of what it is on the internal Danish connection. The cost of this bridge/tunnel has been paid by Sweden, Denmark and EU. With a tariff for passing you reduce the use of the bridge/tunnel. On the other hand, every Dane would otherwise have to pay €1600 euro directly in taxes to cover the total cost of the bridges/tunnels connections. (Trafikministeriet, 2003)

The main point for EU for supporting and paying part of the cost for building the bridge between Denmark and Germany is to connect once again Central Europe and Scandinavia with an infrastructure to support trade and exchange. The distance of the connection is comparable to the two mentioned above and the cost level is likewise similar. The perspective of cross-border regions is a secondary one. EU has supported cross-borders regions in many other places in Europe where the borders of Nation states have prevented a potentially strong exchange of goods and people for economic development and cultural as well as political integration. The EU support to cross-border regions can be seen as economic development – the central goal of EU, but it may also be viewed as a way for EU to undermine the national state constructions and as an aid in developing a more common European market and culture. Many regions and operators are more than happy with an opportunity

to get money from the EU by being active in developing cross-border relations. Carrots are a part of the incentive tools of the EU.

Cross-border collaboration in the Fehmarn Belt Region takes place on several levels, from local level collaboration (collaboration between municipalities in Germany and Denmark) to cross-border collaboration at regional level such as TIM Fehmarnbelt promoting collaboration in tourism between organizations, institutions and business. Educational collaboration: Vocational training school in Nykøbing Falster with German partners and Fachhochshule Lübeck with Roskilde University. On a national level there is collaboration too, but that would be straying from the cross-border concept to national and supranational collaboration such as the STRING collaboration with several nations participating. In business there is simply potential in collaboration by expanding import and export.

Germany and Denmark share a common cross-border region – this is not something unique. Between 2006-2013 there were 53 cross-border cooperation programs in the EU – Fehmarnbelt Region being one of the oldest cooperation, founded in 1990. (European Commission — Directorate General for Regional Policy, 2011) More scholars talk about *new regionalism* as a wave of regionalization that began in Europe and America in the late eighties. (E.g. Keating, 1998 & 2000, MacLeod, 2001, Söderbaum, 2003, Sagan & Halkier, 2005, Scott, 2007 & 2009, and Wheeler, 2002).

As part of the European regional policy, a European Regional Development Fund (ERDF) was created in 1975 to support various projects with the aim of reducing regional differences *inside* the individual European countries and communities.

Over time European regional policy began to address the integration and growth *across* the borders of European countries. With this aim the INTERREG initiative was created in 1989 with funding from the ERDF. (Illeris, 2010, pp. 198-200) The INTERREG initiative consists of cross-border programs that provide support for inter-regional projects. Marcus Parkman[29] shows in 'Cross-Border Regions in Europe: Significance and Drivers of Regional Cross-Border Co-Operation' from 2003, the relationship between the large number of cross-border regions and the introduction of INTERREG in 1989. This relationship has also been pointed out by James W. Scott[30], who states that INTERREG is to a great extent offering a financial incentive to create cross-border regions and, even more importantly, he emphasizes the INTERREG production of regional development strategies. Socio-economic and geographical analyses of the cross-border region's strengths and weaknesses are here made in order to make short, medium and long-term development goals for the region. (Scott, 1999, p. 609) This creates an opportunity for EU to pursue a meta-governance in the European regions in areas that would otherwise fall outside the scope of management of the EU. In Denmark we have seen how tourism policy moves slowly from a liberal paradigm to a more structure orientated tourism policy paradigm with an increased focus on the interaction between public and private agents. (Jønsson & Halkier, 2014) Focus has been on product- and destination development through various innovation projects, often funded with support from the EU's structural funds (Jønsson & Halkier, 2014) and local/regional government.

The huge focus on cooperation across the borders of the European countries is not without reason. Professor of Regional and Border Studies Joachim Blatter[31] points out that many cross-border regions are created on account of mutual socioeconomic interdependence in the border regions. There is even evidence that cooperation across national borders in Europe is helping move the border regions away from their role as peripheral regions. He states how the economic growth in northern American and western European border regions is actually often greater than the national average. With reference to Remigio Ratti and Shalom Reichman he explains this with the tendency that "*border regions are changing (or at least complementing) their character from 'front lines' of the sovereign states towards socioeconomic 'contact zones' for neighboring societies*". (Blatter2004, p. 532) The EU INTERREG Program for cross-border development can also be seen as a way to make some regions less dependent on a national state or as a way to reduce national state power and regional structures, that is to say an effort to undermine the borders.

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Many of the cross-border initiatives from the European Union are located in very strong cross border- regions with collaboration in many sectors and with many common initiatives. (Christian Wichmann Matthiessen 2010) Many of the established cross-border regions are strong partly due to the fact that the language barrier is low. These regions already have many interpersonal relations and also a lot of *local* trade across the border. The Fehmarnbelt Region has issues with both language and infrastructure – even with a tunnel, interaction will cost money. There may be potential for more cooperation in the future, but it is doubtful whether the region could become a strong contact zone for neighboring societies. In the old days, when sailing on the sea was the easy mode of transport and with the stronghold of the Hansa cities around the Baltic Sea and the strong Danish coast cities, we could achieve strong local trade and strong contact zones for connection developed around trading, but naturally at a lower level, compared to the current trade.

It is unlikely that the idea of the Fehmarnbelt Region had occurred to anyone without the upcoming corridor of transport between Scandinavia and Central Europe. (Kiel & Löfgren, 2011, p. 11) The link under Fehmarn Belt is going to connect some rather rural areas in the two *countries* – areas facing major challenges these years. The population in some of these peripheral areas is not specialized and often only has a practical education beyond their basic school education. The number of jobs in conventional agriculture has been reduced significantly in the last 50 years. Several of the small service and trade centers have lost their customers from agriculture, with only less than 6% of the population in the Region of Zealand (Statistical Office Denmark & Federal Statistical Office of Germany) still employed in agriculture and so we see a lot of small shops closed down in these small service centers. Manufacturing industry has only contributed to employment to a limited extent and several small production units have been closed down. The bigger supermarkets in the medium size towns have taken over a lot of customers from local grocery stores. It was expected that the service sector would contribute to the development of societies in the rural regions, but the number of distance workers has not grown as expected, and public services have been centralized into larger entities at fewer locations. On this background tourism, leisure and experience activities have been regarded as necessary ways to secure employment and economic activity in areas where the distance to larger conurbation is too long for commuting and also difficult to manage without a car.

The Fehmarnbelt region comprises lots of land and coastlines with good beaches. You will find beautiful nature and often interesting small towns and manor houses undisturbed by strong economic development. These traits should provide an excellent foundation for offering tourism services and experiences utilizing the resources of the peripheral areas, but the problem is often one of high activity for just one and a half or two months of the summer and low activity the other parts of the year. It is not to be expected for an employee to earn a full year's wages in just two months. So many of these summer jobs are jobs where the workforce consists of students and other people from the larger cities on temporary stays in the region when there are many tourists.

The effort must be to expand the period of tourism activities by developing new products and trying to make it attractive to visit these regions in other parts of the year as well. If this is to succeed, the tourist organizations need to change the marketing from just beaches "as reasons to go", to manor houses, nice hotels, churches, quality meals and events distributed over the year. Also more generally to develop tourist attractions which are less dependent on weather and rather supported by human activity. This change should not undermine the effort to also increase the number of visitors during peak season. There is capacity for more visitors – even in the summer period in the Fehmarnbelt Region. Product development and creation of new experiences are also on the agenda for marketing the region in the summer time as well.

Tourism, Innovation and Management (TIM)
This article is based on data collected in connection with the German-Danish project "Tourism, Innovation and Management (TIM) Fehmarn Belt". The TIM-project is created by local and regional tourism organizations in the Fehmarnbelt Region and is partly funded with support from the EU's structural fund INTERREG. The project emerged from a former project "Destination Fehmarnbelt", a project created by the regional tourism organizations in the cross-border region. Destination Fehmarnbelt followed a top-down approach. The expectation was that a shared intensive marketing campaign in the project would create an incentive for networks between tourism operators in the cross-border region. As this was only partly successful, it was decided to start a new project – now with a bottom-up approach. In the TIM project the aim was to create a project where the bottom-up approach was an important part of the project. Local tourist organizations and the tourism operators were involved from the beginning in an extensive round of interviews with firms in the tourist sector in both countries. In the TIM project knowledge sharing and inspiration were also promoted through

organized field trips, where German and Danish firms in the tourism sector went to visit and learn from each other. The expectation was that the project could give rise to networks between the tourism firms and a common promotion of the destination through joint events and campaigns. Beside these goals, a focus on how to make a more sustainable destination management structure in the cross-border region was also encouraged.

Part of the project was to perform a guest survey on the ferry over Fehmarn Belt, where we asked 1350 guests about their traveling habits and preferences. Another part was to interview 40 German and Danish directors and owners of companies in the tourist sector about the challenges and strengths of the companies, their interest in networking and their expectations for the project. We have used the interviews to develop a better understanding of the challenges from the point of view of the companies. The selection of companies was carried out in cooperation with local tourism organizations. In connection with this part of the project we have identified challenges and needs of businesses present in the region. We have made a follow up interview a year after the first round of interviews. The second round was conducted as a telephone survey with part of the companies interviewed in the first round. We approached these firms with further questions about their actual needs and preferences in relation to regional management. Furthermore, we have participated in TIM study tours where we have had the opportunity to observe the business owners' meetings with each other via the project.

The various approaches mentioned above serve as the basis for our discussion on who has the skills and the managing capabilities to strengthen the destinations in the region by supporting/facilitating the development of new products, and who are able to promote the region in such a way as to contribute in expanding the period of tourism activities and thus creating more jobs in the region. The aim is to identify the needs of businesses with special emphasis on regional management in the tourism sector.

Our main questions are:
- *Can the two regional organizations and the other participants in the TIM project contribute to an increased cross-border cooperation and contribute in increasing the quality of tourism services, e.g. through networking?*
- *What do the tourism stakeholders regard as their common interests, needs, challenges and aspirations?*
- *What must be done to increase the activity in the tourism sector partly in the peak season and particularly the rest of the year?*
- *What are the main reasons for tourists to cross Fehmarn Belt by ferry between Rødby and Fehmarn?*

Regional Management

Here we will discuss regional management as territorial planning and supporting local entrepreneurship. Our subject is the organization of regional management in tourism in two different countries and cooperation between these. Both in Germany and in Denmark the public organization of tourism is divided into levels. In Germany public organization has four levels:

1. The national Deutsche Zentrale für Tourismus e.V. (DZT),
2. The state level, in our case Tourismus-Agentur Schleswig-Holstein GmbH (TASH)
3. The regional level, here Ostsee-Holstein-Tourismus e.V. (OHT)
4. And the local tourism organizations (LTO) engaged in the project: Tourismus Agentur Lübecker Bucht, Hohwachter Bucht Touristik GmbH and Umweltrat Fehmarn

In Denmark three levels exist:

1. The national VisitDenmark
2. The regional level, in our case Visit East Denmark (ØDT)
3. And the local tourism organizations (LTO) engaged in the project: Visit Vestsjælland, Visit Odsherred, Business Lolland-Falster and Vordingborg Udviklingsselskab. There is more local tourism organizations in Region Zealand, most of them linked to single municipalities.

Changes in Denmark in 2015

In 2015 substantial changes occurred in Denmark, closing down all the publicly supported regional tourist organizations, including ØDT who lost the role as a publicly financed regional tourism organization, but continues as knowledge base for tourism, for tourism marketing and for tourism development as a commercial foundation earning its own money in projects without public base financing.

In Denmark the five public regional tourist organizations have been replaced by two small organizations: Coastal tourism along the North Sea (Vestkyst Turisme) and Baltic Partnership (Østersø Partnerskab), with some regional partition, but it is still not possible to predict the role of these thematic (Coastal) and regional (East and West) organizations.

Beside this small "regional" organization there are three new national organizations next to VisitDenmark: City Tourism, Conference Tourism and Danish Coastal and Nature Tourism. This means that the creation and development of destinations are now totally left to the local level and collaborations between local level tourist organizations with no help from public, regional tourist organizations.

Results from the investigations in 2013 and 2014

In the investigations carried in 2013 and 2014 we looked at the structure at that time both in Germany and Denmark: OHT and ØDT. Our main focus was the regional management, albeit also at the LTOs, as they carried out a substantial part of the local destination promotion and contact with the local tourism firms.
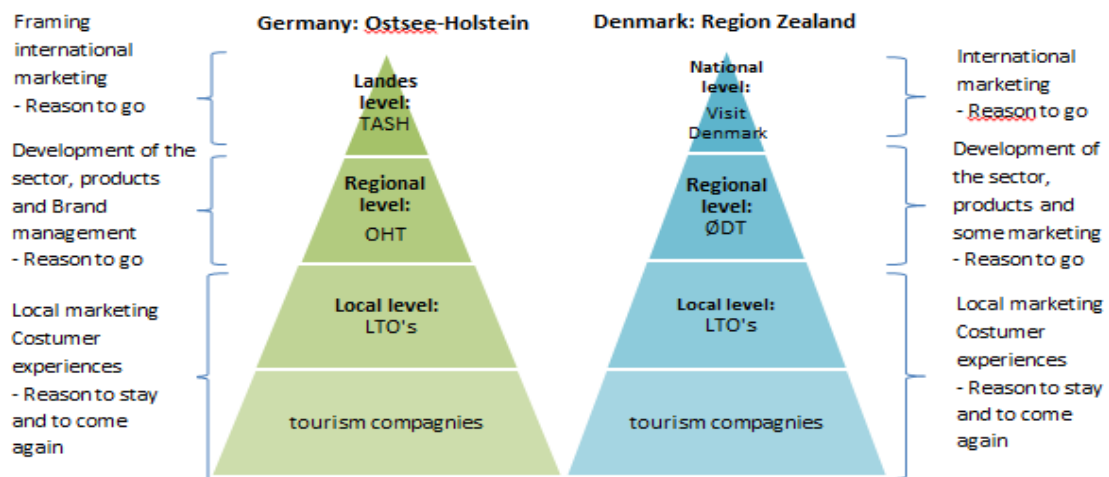
Different types of states form different organizations in the welfare states and this also impacts the tourist organizations. (Bohlin, Brandt & Elbe, 2014) We found some interesting differences between the German and the Danish regional tourism organizations. The main difference is that the German OHT is formally seen a registered association ('Verein'), with members (primarily municipalities) who actively choose to be a member of the association and who pay a fee to be a member. The Danish ØDT was and is a so called commercial foundation, but until 2015 the organization received its main income from a basic contract with the region. All operators in the tourism sector in Region Zealand were seen as stakeholders without paying to ØDT and regardless of their wishes to be organized through ØDT or to be on their own. This difference between the two regional organizations may contribute to the following result: Whereas the German tourism actors may see their membership of OHT as an investment, the Danish tourism operators may in some cases have a less positive attitude towards ØDT and see ØDT's activities as unwanted, regional interference in the development of the tourism sector at municipal or company level. Both regional organizations depend on regional strategies and need basic funding from the region to develop the tourism sector through new projects and concepts. ØDT as an organization picking up basic strategic funds from the regional authorities, was closed down in 2015. Instead the Danish tourist organizations are now replaced on a national level with certain initiatives such as the national initiative for promoting coastal tourism.

Despite the inherent difference in the two regional types of organization, their objectives were much the same. Both organizations' objectives were:

1. Strengthening and further development of the tourism sector – higher quality and new products
2. Coordinating marketing efforts
3. Representing the interests of the tourism sector in the region
4. Collecting ideas, trend scouting and disseminating the same in the tourism sector

In Denmark the regional level is much weaker now without public funding from the region.

The structure of the National, regional, local and company level organizations in 2014

Framing international marketing
- Reason to go

Development of the sector, products and Brand management
- Reason to go

Local marketing Costumer experiences
- Reason to stay and to come again

Germany: Ostsee-Holstein

Landes level: TASH

Regional level: OHT

Local level: LTO's

tourism compagnies

Denmark: Region Zealand

National level: Visit Denmark

Regional level: ØDT

Local level: LTO's

tourism compagnies

International marketing
- Reason to go

Development of the sector, products and some marketing
- Reason to go

Local marketing Costumer experiences
- Reason to stay and to come again

From Money Distribution through Marketing to Knowledge Dissemination and Innovation

The regional tourist organizations have played an important role in supporting private tourist companies in advertising and priority was not on development and innovation on a regional scala. Everyone regarded themselves as having the right to support. Already in 1989 David Harvey discussed the tendency to a change in the urban policy from local state management of services to the population in an area to a more entrepreneurially orientated urban policy. (Harvey, 1989) This change may also be seen in the regional management of tourism. The activity of the regional organizations before was mainly to focus on support of advertising and marketing of the private firms in the region and the region as such. This has changed and now the regional organizations are focusing on development activities organized in projects, due to the fact that the new law regulating VisitDenmark from 2010 allocates the duty and control over international marketing to VisitDenmark and the development projects to the regional tourist organization. (See "Lov nr. 648 af 15/06/2010. Lov om Visitdenmark", section 9.) This has caused much discussion among operators in the tourist sector, especially in Denmark, due to the fact that the larger tourist orientated firms still wish to have the support from regional marketing with a combined financing from the firms and the regional tourist organization.

Another reason behind this discussion is that regional entrepreneurialism has focused on projects. The Swedish tourism scholars Magnus Bohlin, Daniel Brandt and Jörgen Elbe state that "*More or less everything is organized as projects based on temporary partnerships*". (Bohlin, Brandt & Elbe, 2014) They point out that these projects often entail a huge bureaucratic burden and that the short timetables seldom allows for planning more than three years ahead. (Bohlin, Brandt & Elbe, 2014) This leads to challenges in ensuring a coherent and especially long-term strategy for business promotion in the field of tourism. Frank Moulaert, Arantxa Rodríguez and Erik Swyngedouw point out that large-scale urban development projects are of increasing importance in urban policy and urban dynamics. This is creating social polarization due to the fact that the new urban policy promotes some places and classes while passing over other places and classes. (Moulaert et al., 2003) Similar to the urban policy, larger projects are now an important part of the tourist initiatives at local and regional level. This may be the creation of new sights, new museums or development of existing sights.

As mentioned above, beside VisitDenmark, three new thematic national organizations have been established: City Tourism, Conference Tourism and Danish Coastal and Nature Tourism. This means that the development and creation of destinations is now left completely to local tourist organizations, as well as the general possibility for getting support for advertising. This money is now allocated to national priorities in the three new organizations.

In the TIM project and the two regions, thematic networks were created between for example, small producers of specialties in the food sector, such as orchards, vegetable producers, ecological farmers etc. Networks were created for exchanging experiences and common promotion of the products, under the umbrella of the TIM project. The regional and local tourism organizations meet several times a year at project meetings for discussing the project and sparring. The project was divided into three themes:

1*. Green business travel/business tourism*
2. *Culinary delights*
3. *Activities in and on the water*.

Under each theme destinations represented by local tourism organizations cooperate across the Fehmarn Belt. They try to develop new touristic products like, for example, tourism brochures, a fishing guide, a touristic map of the cross-border region, events and not least study tours where the touristically orientated companies in the region are invited to visit similar companies in the neighboring country. The close ties between the organizations make knowledge sharing easier. The informal interactions over dinner or a drink in the evenings are crucial. Frequently representatives from the local tourism organizations give each other ideas, e.g. on how to create a framework that enables locals to help create a story about the destination, ideas for booking portals or the establishment of more tourism to the sea. The various destinations each have their strengths; they can share by linkage with each other. It is important that there are opportunities and time to informally discuss how various ideas may be implemented in another destination, with the prevalent cultural and structural conditions.

For the project managers it is the hope that the shared activities in the project (events and study tours) will lead to new products and business cooperation both local and interregional. From the study trips we observed, that the participants gathered in small groups either based on a shared interest and expert knowledge in a particular topic, e.g. cattle ranching or management of camping sites, or based on geographic area – at the destination where they work. Here they also get inspiration and time to discuss how to lift the destination by inventing new local products.

David Harvey stresses how the change from Managerialism to Entrepreneurialism with more market rationality and more public-private partnerships "*focuses much more closely on the political economy of place rather than of territory*". (Harvey, 1989, p. 7) That is also the case of regional policy in relation to tourism. Places are much more in focus than the whole territory. Tourism projects are place related in a sector where places, regions and countries are in competition. At the same time projects and place initiatives may benefit the whole region or territory, due to the fact that projects at places may create a reason to go to the place. Other services and touristic sights in the region may benefit from it, by being the reasons to stay in the territory and thus generating an increased turnover in the many tourist orientated companies.

In Region Zealand Visit East Denmark has, for example, created a sizable project on Vikings. Many tourist firms cannot see themselves in that project and do not understand how Vikings and Viking sights could constitute a reason to go to the region of Zealand while once in the region, a number of tourist activities, sights, hotels, restaurants and other services would be the reason to stay and generate an increased turnover in the tourist sector as such. Several of the tourism operators we interviewed claim to see great potential in Fehmarn Belt link. This also how Christian Wickmann Matthiesen (2010) in the official publication for the project claims it will be, with experience from the cross-border collaboration in the Alps. One hotel owner on the island of Fehmarn says it simple in the hope, that a closer cooperation with shorter transport time will generate more tourism. It will be easier to cross the border, e.g. with a Fehmarn Belt Ticket for all public modes of transportation in the cross-border region. "It is interesting to cross borders," he says, and after taking part in a study trip in the TIM project he sees great potential in day trips to Lolland, Falster and Møn for tourists on Fehmarn – he mentions especially Møn's Klint and Knuthenborg.

We may conclude that there are numerous possibilities for cross-border collaboration and in the interviews and on the study tours, several of the participants expressed wishes to collaborate and some have already created cross-border collaboration, learning from each other. Mainly smaller tourist businesses have established such collaboration. The larger ones on the Danish side are – with a couple of exceptions – more hesitant in formulating wishes to increase the collaboration.

Ideas from the Hotels
Several of the German hotels express a request for the organization of Danish-German travel packages, expecting a market for it. The city of Lübeck is mentioned as an important pull factor in a travel package, but also entrance discounts to the museums of the region are mentioned as interesting parts of a package. The culture and heritage museums of the German-Danish border region are developing a stronger cross-border

network and are also discussing how to develop tighter ties with the tourism organizations travel agencies and tour providers.

One idea was mentioned: the making of historical travel packages. An example could be a theme around the Schleswig War of 1864 between Germany/Prussia with Austria and the Danish Kingdom. This event greatly influenced the formation of both the German and Danish national states and national identities. Subthemes could be the history of warfare, our shared history and cultural heritage, border identities or everyday lives in bilingual Schleswig-Holstein. With such a theme it would enable the tourists to learn the complex story of the cross-border region. 1864 is currently discussed at great length in Denmark, on the occasion of the 150th anniversary of the war. The anniversary in 2014 was also the occasion for producing a Danish television series aired on Denmark's national broadcasting corporation (DR) the same year.

Like the Viking theme as a reason to go to Denmark, 1864 could serve as a strategy in the territorial planning along with products that ease the mobility in the border region, and may serve as a framework for local entrepreneurship – specific networks, partnerships and product development oriented towards the theme.

Jonas Larsen, a Danish tourism and mobility professor, criticizes the traditional distinction between everyday lives and tourism. He stresses how many everyday spaces are sites of tourist consumption. (Larsen, 2008, p. 22) Hence we should not view tourism as something isolated from the local society. New possibilities for cultural activities like museums, boutiques, galleries, farmers markets, cafes, parks etc. are also used by the local citizens and can also serve to attract skilled labor to the region. What is good for tourism is usually good for the local societies too and vice versa – if the attractive areas are not ruined in the long run due to unregulated investments.

Branding the Two Sides of the Cross-border Region
Ostsee Holstein is a strong touristic brand in Germany. In a country without much coastline, both the German west coast and east coast are favorite domestic destinations. The Danish part of the region has – in spite of the very good beaches and interesting manor houses –experienced a strong domestic stigma over the past several years. Closed workplaces, youth emigration, lack of training and many citizens on transfer income have all become part of the story – the brand – of the region for the southern part of the region of Zealand. Among the informants, we experienced a strong desire to create a different story about their region.

Regional branding in Germany and Denmark could be connected to food production. Food networks could contribute to developing sales organization and regional brands. Small and medium sized enterprises in the Danish food industry have difficulties competing on price due to high wages. The enterprises need to find other business models like experience economy, where the customers are willing to pay higher prices because of high quality and regional storytelling. (Boesen, 2012) One point of departure for a more interesting brand also includes the good beaches, interesting little towns and manor houses.

> "Regional brands can create increased economic growth and employment in two ways. Firstly, by attracting tourists to visit and experience the region and secondly through exports where consumers experience characteristics from the region through consumption of products from the region." (Boesen, 2012, p. 1)

In our interviews we find that a significant part of both German and Danish hotels have local supplier networks. From this we understand the need for supply chains, understood as networks, linking all the activities of the product before it is consumed. The hotels utilize the regional brand of quality food to attract high class tourists and business tourism, for example by making exclusive food trips in collaboration with local manor houses and other food producers, where the participants get the chance to follow the product from farm to fork. This shows an understanding in these parts of the tourist sector of the need to not stand alone, but cooperate with others. This understanding is more widely accepted among German hotels than among the Danish hotels.

> *"You think you're competitors and it's good to know your competitors. If you know their product maybe you can also work together on something new on your common marked. This may be the public role to create some of the possibilities for collaboration. Small*

businesses need advising and there are many small businesses in the tourism sector, they have not their own development capacity, so they need to be presented with new possibilities. And I think we have done it in this project."

– Karin Melbye Holm, Director, Visit East Denmark

In this article we argue that in the network society (Castells, 1996) regional management of tourism must be a combination of territorial planning and local entrepreneurship. Hence part of the regional management must be to encourage local networks and entrepreneurship. The networking part is also something requested by some of the informants. The public role or the role of the regional agencies is then to act as a meta-governor for autonomous networks. (Sørensen, 2007)

Inter-regional Collaboration and Networking

As contact zones, border regions have something special to offer. It is fascinating that you can drive only a few hours and find yourself in another country with a different language and other traditions. It awakes curiosity in people and can be a great pull factor for tourists, for example as day trips from the holiday resort. But cross border collaboration is not always easy. An important factor for the successful Scandinavian cross-border regions has, according to the Swedish ethnologist Orvar Löfgren, been built on physical links across the border. The construction project has provided energy to materialize the transnational integration. The integration has been demanded by a combination of engineering and imagining a region, where physical bridges have been created, but also strong symbols through various cultural projects. (Löfgren, 2008, p. 200) In the Fehmarnbelt Region we see the same energy around the construction of the tunnel. On the Danish side the link is articulated as a possible kick starter of regional development and we see the same hope, but much more skepticism, on the German side of the belt.

Cross-border institutions or collaborations are often seen as a pragmatic way of solving common problems. In our case the cooperation between the former Storstrøms Amt and Kreis Ostholstein started in 1989 after the Danish parliament, "Folketinget", decided on the construction of a bridge over Storebælt. What brought them to collaborate was a common fear that the traffic between Scandinavia and Central Europe would be led through Jutland and the "Fugleflugtslinje/Vogelfluchtlinie" (literally "as the crow flies") across the Fehmarn Belt would subsequently lose its significance as an economic lifeline of the area. (Fehmarn Belt Region 2007, p. 4) Today fear on the German side is of becoming a transit zone after the opening of a transport corridor across Fehmarn Belt and on the Danish side the fear is to remain one. There has been a lot of skepticism against the coming link – especially on the German island of Fehmarn, but also by the Lübecker Bucht. Citizen initiatives have been started to counteract the coming link especially the freight link that will come with the establishment of the fixed link.[32] The skepticism is focused on topics like environmental damage, decline in tourism due to the noise during the construction and subsequently due to heavy traffic and commuting difficulties due to the conversion of rail links. Par example a group of citizens has in 1994 started an action alliance against the fixed link. They call themselves 'Das Aktionsbündnis gegen eine feste Fehmarnbeltquerung e. V.' and are supported by a number of organizations and local political parties. At the German public hearing of the planning approval process, the authorities received over 3000 objections (Bossy, 2014), at the Danish one they only received 42 written responses. (Femern.dk, 26.09.2013) In our interviews with tourism operators on the island of Fehmarn we partly rediscover this skepticism. In Germany Fehmarn is a beloved domestic tourism destination best known for its brand "Sonneninsel" or Sunshine Island, and in our interviews the businesses address the regional tourism organization for information about how the new transport corridor will affect the local tourism and the brand of the region as a place to relax. But that said, the German hotels that we contacted (also) on Fehmarn are very interested in having closer ties with possible Scandinavian partners.

The TIM project as an INTERREG funded project aspiring to be a contributor to the creation of the cross-border region. Interactions across the belt are thus of significant interest. Generally we find some differences in the interests of cross-border networks between the Danish and the German hotels. All the German hotels have or want to have Danish partners – while the Danish hotels are not necessarily looking for German partners. The

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[32] E.g. „Aktionsbündnis gegen eine feste Fehmarnbeltquerung", „Holstein ohne feste Fehmarnbeltquerung", „TsT (Tourismusort statt Transitort) ‑ Timmendorfer Strand", „Ratekau wehrt sich – keine Güterzüge durch unsere Gemeinde", „Pro Lensahn – Kontra Bahnlärm" and „Kein Güter-Bahn-Verkehr durch die Badeorte der Lübecker Bucht."

vast majority of German hotels cooperate with Danish distribution channels. On the Danish side the hotels have far from the same level of cooperation with German distribution channels. The Danish hotels, on the other hand, are interested in going on study tours – especially for inspiration on product development – while we do not encounter a similar interest on the German side. Their experience is that they can learn a lot from their German colleges both in regard to catering, housing, watersports activities and even stockbreeding.
As the director of Visit East Denmark puts it:

> *"That is one of the key aspects of the project; that we create coherence between various partners, who can do something together and see themselves in a connection, where they have a broader focus than their own small or relatively small business area. It is important to be able to create concepts, that have a broader appeal, or to see you selves as part of something larger, this creates new perspectives and new possibilities. You can have a broader perspective, more tools, more friends, and you have the possibility to create a larger*   *product".*
> – Karin Melbye Holm, Director, Visit East Denmark

Cross border regions are not created though top-down projects alone. There must be something to attract the other side of the bridge. Löfgren writes that borders not only provide a framework for states, but also for relatively homogenous national cultures. (Löfgren, 2008, p. 196) This is what makes it desirable to cross borders, but the collaboration across borders is not without obstacles. Löfgren uses the Øresund link to show the stages of integration experienced there. He does this by describing three barriers that arose after the Øresund Bridge:

1) The ticket prices were a problem, and the focus was on the few crossing cars after the bridge increasingly became operational.
2) The bureaucratic barrier, where e.g. businessmen who worked across the strait or belt discovered that what they saw as natural behavior was not anticipated in the neighboring country as a natural behavior there; this fact developed a narrative about "abroadness".
3) The third barrier emerged in the form of a clash of cultures, where national stereotyping was booming.
4) We may add the language barrier.

Löfgren's point is that these "barriers" are in fact symptoms of an integration taking place. (Löfgren, 2008, pp. 201-202)

The same kinds of barriers are met by both businesses and organizations in the Fehmarn Belt project. Ticket prices for the ferry are a great obstacle especially for campsites. Danish campsites in the region have created a strong network, sharing knowledge and influencing the political level. They are – unsuccessfully – trying to build collaboration with Scanlines (German-Danish ferry operator) for cheaper ferry tickets for campers in the region. Infrastructure is a critical theme for the tourism operators. This is especially notable in our interviews in Germany. As one hotel owner says: It is possible that more Scandinavian tourists will come to the destination after the construction of the tunnel, but add: *"The only question is whether these are driven solely by the reduction in travel time".* She underlines how the construction should be followed up with an overall improvement of the road network to the smaller touristic places and with marketing targeted at the Scandinavian market. Also better street signs are mentioned on both sides of the belt. There is a wish for more of the attractions to have signs on the roads leading to the places. In regard to the usage of the bicycle route between Berlin and Copenhagen, the contrast in the signals on the Danish side in comparison with the German side is mentioned. It is said that the tourists feel lost when crossing the belt into Denmark.

Bureaucratic barriers are also a challenge; for example, German food producers meet obstacles when they want to distribute their products directly in Denmark such as at a regional food festival. The food producers need an importer.

As we have seen, several barriers for integration in a cross-border region exist. Time and education as well as projects such as TIM are needed to overcome these barriers; projects that may be useful to the tourist sector. If the tourist sector is to create new jobs and tourist activities outside the peak season, it is necessary to have a look at the regulations of trade and other disrupting regulations preventing new types of collaboration.

Main Reasons for Crossing the Border with the Ferryboat
In a special small publication for the project we have showed the results from our survey on Rødby-Puttgarden ferry.

The table below shows some few central results from this survey. The most striking feature is that half of the Danes are traveling to Germany to visit the boarder shops to buy beer, wine and other grocery goods.

Germans are significantly more likely to go on day trips for tourism purpose than the Scandinavian respondents. In the table it is also clear that Swedes and Germans are significant more likely to take a journey with more overnight stays than Danes. This should be taken into consideration when planning package trips. It is to be expected that Danes will be more difficult to get going on a package trip than the Germans.

Table 1. Reasons for traveling

	Germany	Denmark	Sweden	Other countries	Demark without border-shoppers
Holiday: Traveling to or from holiday resort	51%	28%	34%	44%	53%
Holiday: Round trip, several overnight stops	19%	7%	23%	35%	15%
Holiday: Day trip from holiday destination	13%	4%	6%	3%	9%
Personal day trip from home	4%	7%	5%	3%	14%
Day shopping ticket from home	0%	50%	20%	5%	--
Business trip	13%	4%	12%	10%	9%
Number of persons having answered the questions	431	402	279	177	201

Border shoppers
The most remarkable finding is – maybe not surprisingly – that a significant part of the guests on the ferry are border shoppers. 47% of the Danes and 20% of the Swedes on the ferry are traveling to Germany to take the opportunity to buy goods at a significantly lower tax than in their home countries. When 20% of the guests on the ferry do not travel any further than to the border shop, it is easy to fall into the trap of thinking that this is not contributing to the tourism in the border region. But it seems fair to assume that the ferry traffic is maintained by border shoppers and that it is because of the borders shoppers that the ferry can sail with two departures per hour and with relatively low ticket prices – to the benefit of tourism, business and commuting across the belt. Here it is also important to remember that border shopping is not determined by the season to the same extent as other tourism.

Holiday travelers
64% of the guests on the ferry crossed the belt in relation to a holiday. The days of August 2013 when we conducted the survey, the Germans constitute the nationality using the ferry the most. This was not in order to border shop, but primarily in connection with a holiday. 84% of German guests traveled as part of a vacation, this applies only for 37% of the Danes (though 71%, if not including the Danish border shoppers).

The difference in the number of Danish, Swedish and German travelers in our study may be due to the fact that we conducted the survey in the last part of the Danish and Swedish school holiday, 8 and 9 August. Most of the

German Länder on the other hand have summer holidays from school throughout August. We would thus expect different numbers, if the survey was also conducted in July.

Day trips

In the study, we can see how likely the guests are to make day trips over the belt from their holiday destination. It shows that 13% of the Germans, only 6% of the Swedes and 4% of the Danes (8%, if we do not include border shoppers) are on a day trip. It may be assumed that the relatively higher proportion of German day trippers to some extent consists of German tourists on holiday by the German coast line who take a short trip over the border to experience the neighboring country and maybe visit a few attractions.

7% of all our informants on the ferry are day trippers from their holiday destination. This tells us that people are crossing the belt for only a day to visit the neighboring country for touristic purposes. Here is a market that may well be increased. More German hotels were eager to promote such one day trips from the hotels. The need for better logistics, especially for travelers without a car, was stressed.

Tour

Several of the German hotels we have interviewed suggested the development of Danish-German travel packages, with a common Danish-German-Baltic Sea destination is marketed. We asked the guests on the ferry whether they were on a round trip with several overnight stops. 18% of all the respondents were on a trip with several over overnight stops, most of them Swedes or "other country citizens". This suggests that there might be a market for this type of holiday where the cross-border region markets itself as a binational destination.

We know that many Swedes use the island Fehmarn as an overnight stop on their way to or from a final holiday destination. One innkeeper at Fehmarn has specialized in hosting Swedish bus tourists. She tells us that almost 80% of her overnight guests are Swedish. They are mainly retirees and come on travel busses. She says that every day a bus with Swedish tourists arrives. This type of accommodation will not abound for Germans in Denmark or Danes in Germany. For a Dane who has been on a longer vacation, it would be preferable to drive all the way home, than to stop for accommodation in Northern Germany.

Destination of the Travels

We were interested in examining where people using the ferry were going. This tells us something about what makes people cross the Fehmarn Belt today. We asked the guests on the ferry: "Which country are you traveling to today?" We assumed that most of the Scandinavians were using the Rødby-Puttgarden link to go on holiday in southern Europe, using Germany as a transit country.

Table 2. Destination of the travel

	Danes	Germans	Swedes	Other country citizens	All respondents
Denmark	16,8%	28,8%	4,4%	25,5%	19,2%
France	1,9%	0,0%	1,4%	1,0%	1,0%
Germany	76,2%	32,4%	49,8%	28,6%	48,7%
Hungary	0,5%	0,0%	0,0%	0,0%	0,2%
Italy	2,7%	0,0%	0,0%	0,0%	0,8%
Netherlands	1,1%	0,2%	2,4%	16,7%	3,5%
Norway	0,0%	6,3%	0,0%	5,2%	2,8%
Sweden	0,0%	30,3%	39,0%	13,5%	20,9%
Other countries	0,8%	2,0%	3,0%	9,5%	2,9%
Total responses	374	413	295	192	1274

We were surprised to see that remarkably few had countries other than Germany, Denmark and Sweden as their destination. 76,2% of the Danes and 59,8% of the Swedes had Germany as their destination (we will show later which resorts in Germany the guests traveled to) and only 4,6% of the Danes and 2% of the Swedes were traveling south of the Alps. One reason may be that people choose to fly to the destinations, which are further away.

The Germans were going to Scandinavia. 28,8% to Denmark, 30,3% to Sweden, 6,3% to Norway and 32,4% were headed home to Germany. This was not that much of a surprise. It is well known that Scandinavia is a beloved holiday destination for Germans.

We also asked the guests where exactly in Germany and Denmark they were traveling. Of all the respondents, 39,6% of the people traveling to Denmark had Copenhagen as a destination. It was especially citizens from other countries than Germany and Sweden, who traveled to Copenhagen. "Only" 31% of Germans had the Danish capital as their destination.

Table 3. Travel destination in Denmark

Where exactly in Denmark are you traveling to today?	Germans	Swedes	Other country citizens	All respondents
Copenhagen	31,0%	41,7%	61,2%	39,6%
Rødby	21,4%	16,7%	0,0%	15,5%
Marielyst	3,2%	0,0%	2,0%	2,7%
Møn	3,2%	0,0%	2,0%	2,7%
Roskilde	2,4%	0,0%	4,1%	2,7%
Lolland/Falster	2,4%	0,0%	2,0%	2,1%
The rest of Region Zealand	4,8%	16,7%	10,2%	7,0%

37,4% of the Germans going to Denmark are going to destinations in Region Zealand. Most of them (21,4%) to Rødby – the town where the ferry lands. 72%[33] of these are on day trips from their holiday destination. It is Germans making a domestic holiday and making a day trip across the belt, to see what is on the other side and get a brief feeling of being abroad. This is important knowledge, as this represents a chance to give these tourists a reason to come again and maybe stay longer. It is thus essential what their immediate experience of Rødby and the surrounding area is. It should be rendered easy to find places perceived as authentic, but also cozy and astonishing. Something to talk about when they get home and which are worth returning to. It ought to be easy to get an overview of which attractions, museums, special eateries and outdoor experiences for all generations are in the area or a little further into the region. The destination must be seen as rich in both in nature and culture. This may be achieved through, for example, branding of an authentic fishing environment by Kramnitze harbor where it is possible to buy fresh fish directly from the local fishermen, or a dinner of local products in the beautiful surroundings of the manor house Lungholm Castle. At an event on Lolland several local tourism operators discussed to the possibilities for generating more tourism to the region. The creation of some kind of portal near the highway in Rødby was requested by many. Its function would be to welcome tourists to the region, Denmark or even Scandinavia when they arrive by ferry or later via the tunnel. The ideas were manifold and of very different levels of ambition, but the common denominator were to give tourists a sense of what the destination had to offer. Elements such as the use of environmentally desirable production methods, architectural quality and sources of inspiration and leisure were consistent. All this to give reason to stop at the different locations with focus on different interests and easy description for tourists at the location and/or in small brochures.

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[33] Please note that that we are counting in small numbers. Of the 25 Germans traveling to Rødby, 18 are on day trips.

Where exactly in Germany are you traveling to today?	Danes	Swedes	Other country citizens	All respondents
Border shop	36,1%	9,4%	0,0%	24,3%
Burg	20,4%	16,5%	1,9%	17,2%
Puttgarden	10,9%	23,0%	7,4%	14,0%
Other German destinations	7,7%	23,0%	22,2%	13,8%
Hamburg	6,7%	8,6%	31,5%	10,0%
Lübeck	0,7%	10,1%	14,8%	5,0%
Ostsee Holstein	3,5%	3,6%	3,7%	3,6%

Table 4. Travel destination in Germany

Destinations also referred to by several ferry guests are: Marielyst, which has several times been voted the best beach in Denmark; Møn, known for its magnificent scenery and rich cultural life and Roskilde, a medieval capital with strong ties to the Danish royal family and with a great Viking brand, especially through the Viking Ship Museum. All places which have, through rich nature or history, been able to create a clear brand. We also asked the guests who were going to Germany where exactly in Germany they were traveling. 67,4% of the Danes have their destination on the island of Fehmarn (Border Shop, Burg and Puttgarden) and the vast majority of these are border shoppers. We do not know whether they also visit tourist places on Fehmarn, in connection with the border shopping. The main touristic destination for the Danes on the Rødby-Puttgarden ferry is the metropolis of Hamburg. DSB, the national railway company in Denmark, offers cheap trips to Berlin, Hamburg and Lübeck. They are obvious destinations for Danes who want to go on a city trip in the neighboring country. Berlin is not mentioned by the guests on the ferry due to that the more efficient route from Denmark to Berlin is over Gedser-Rostock and not Rødby-Puttgarden. Although Hamburg is the favorite Danish tourist destination in Germany in this survey, it is remarkable how few Swedes and Danes, in percentages, are going to Hamburg compared with other country citizens. It is also remarkable how few Danes travel to other destinations in Germany than Ostsee Holstein understood as Kreis Ostholstein with the island Fehmarn, Hansestadt Lübeck and Plön, compared to Swedes and other country citizens.

Hardly any of the Danes on the ferry in August were going to Lübeck. The city manages to attract many tourists from other countries. We can only guess at why Danes do not travel to the city in the summer month. Perhaps in Denmark, the city is more connected with Christmas weekend trips than with summer vacations.

It is remarkable how few Danes were traveling to Germany for anything other than the border shop.

Conclusion
"The European Cross Border Interreg. Project" demonstrates an interest from below to benefit from collaboration and develop links in the tourist sector.

The decision to build a tunnel between North Germany (Femern) and the south-eastern part of Denmark (Lolland) is followed by a grooving interest for creating a cross border region with collaboration between businesses and agencies in the tourist sector. The politicians hope that the tourist sector could create collaboration contributing to the development of a cross border region with some common identity or at least knowledge about each other.

Our study was financed by an EU-project, and we can point out the following results:

1.) The case studies with 40 Danish and German firms in the tourist sector seems to have contributed to the development of links and exchange of knowledge and business ideas, and seems to have created some collaboration between firms in Germany and Denmark.

2.) The project organization run by two regional tourist organizations has created a lot of knowledge through visits and workshops.

3.) The project period was too short to make sure that the collaboration was well organized, but knowledge about poetical partners in the two countries was created.

4.) The 1.300 interviews with travelers on the ferryboat between Lolland and Fehmarn demonstrate that the main reason for Danes to travel is to buy cheap alcohol and beer in the border shop or to go further down to Southern Europe. The Germans was going to tourist destinations in Denmark, either to the Danish beaches or to Copenhagen.

Perspective:
1) If the politicians want to create a cross border region, with the tourist sector as a front runner it might be necessary with more focus to develop a cross border tourist organization as an umbrella for the collaboration between the tourism firms.

2) The collaboration between firms from the two regions are important if the population of the periphery areas in Denmark and Germany should benefit from the tunnel. The main reason for building the tunnel is to develop a better infrastructure in Europe and to connect Goteborg in Sweden, Copenhagen and Hamburg with a fast train and good highway, to integrate the common market.

3) The tunnel project is at the moment delated due to the fact that German environmental organizations have made protest of the building of the tunnel, until the German authorities beside about the case there will be no building of the tunnel. The German authorities need at least two to make their decision

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THE EVOLUTION OF REGIONAL ECONOMIES IN WESTERN AUSTRALIA: ALBANY, BROOME, BUSSELTON, AND GERALDTON, 1984-2014

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1. Introduction: Rationale for the Paper

The use of evolutionary concepts is gaining increasing traction in our understanding of the dynamics of regional economies. However, the meaning of key 'success' words such as resilience remains 'fuzzy", often being translated uncritically into regional policy prescriptions. Set against the backcloth of the emerging engagement between evolutionary 'thinking' and policy discourse, this paper employs dynamic econometric modelling to test for the resilience of regional economies and assess the potential impact of policy interventions on long-run development trajectories. This paper is grounded in the context of the 'peripheral' resource dependent and export oriented economy of Western Australia: an economy that has been characterised by more than a decade of strong and consistent growth. While this has slowed recently, Western Australia nevertheless continues to perform well relative to other Australian states and territories. However, at finer spatial scales the economic performance of regions and localities has been highly uneven.

The research presented here focusses on the evolution of four Regional Centres that have been identified by the *Government of Western Australia* as strategically important in terms of their growth potential: Albany, Broome, Busselton, and Geraldton Importantly, this is part of a broader project building on recent collaborative research between the *Centre for Regional Development, the Western Australia Regional Capitals Alliance* and the *Western Australian Department for Regional Development* which aims:

- To gain a more detailed set of insights into the spatial performance and levels of economic integration within Western Australia

- To determine the opportunities and barriers for regional growth and resilience across Western Australia.

- To facilitate evidence-based policy, indicating specific areas of policy-making that may require revision.

2. Evolutionary Thinking and the Resilience Framework

In general, economic resilience depends on the relationship between the long-run developmental trajectories of regional economies and their short-run responses to external disruptions or "shocks" (Plummer & Tonts, 2015; Martin & Sunley, 2014; Fingleton at al, 2012).

Engineering Resilience: is defined as a globally stable attractor, in the sense that there exists a single basin of attraction, where out-of-equilibrium dynamics tend to drive the system towards equilibrium in response to exogenous "shocks'. Accordingly, short-run dynamics have only a transient effect, with resilient economies 'bouncing back' to their long run trajectories following external 'shocks'.

Ecological Resilience: is defined as a locally stable attractor, in the sense that there exist multiple equilibria with the potential to move between basins of attraction in response to exogenous shocks. That is, there exist critical (bifurcation) parameter values, such that the effects of "shocks" can be permanent, shifting long run development growth paths.

Let $y_{it} = \ln Y_{it}$ define the relevant target variable for regional policy in region i at time t and $y_t = \ln Y_t$ define the average value of the target variable across all the regional in the economy. Assuming that *Relative Resilience* is the appropriate measure of economic resilience then it is possible to next *Engineering Resilience* and *Ecological Resilience* in a simple linear representation of the data generation process (DGP):

$$y_t = \beta_{0t} + \beta_1 y_{t-1} + \beta_2 \bar{y}_t + \beta_3 \bar{y}_{t-1} + \varepsilon_t \tag{2a}$$

$$\beta_{0t} = \alpha_0 + \alpha_1 T \tag{2b}$$

$$\varepsilon_t \sim N\left(0, \sigma_t^2\right) \tag{2c}$$

Where, $\left(\beta_1, \beta_2, \beta_3\right)$ defines the set of "pull factors" determining the response of both the local and benchmark economy to exogenous "shocks", $\left(\alpha_{0t}, \alpha_1\right)$ the deterministic components, and ε_t the set of "push factors" moving the system away from long-run equilibrium: assumed to be normally distributed with zero mean and constant variance and serial independence $E\left(\varepsilon_t \varepsilon_{t-T}\right) = 0$.

Engineering Resilience: In the absence of shifts, if $\left(1 - \beta_1\right) \neq 0$ then the DGP returns to a unique equilibrium defined by:

$$E\left(y_t\right) = y_t^* = \frac{\beta_{0t}}{1 - \beta_1} + \frac{\beta_2 + \beta_3}{\left(1 - \beta_1\right)} \bar{y}_t^* = \delta_{0t} + \delta_1 \bar{y}_t^* \tag{3}$$

As a corollary, if a unit unit roots exists ($\left(1 - \beta_1\right) = 0$) then the set of 'shocks' accumulate displaying path dependence, with no tendency to revert to long-run equilibrium.

Ecological Resilience: As part of a automated general-to-specific model selection strategy that includes diagnostic testing for model congruence, multi-path searches, and encompassing, step indicator saturation (SIS) can be used to test for an unknown number of parameter shifts, occurring at unknown times, with unknown duration and magnitude (Castle et al, 2015).

$$\alpha_{0t} = \alpha_0 + \sum_{t=1}^{T-1} \phi_t 1_{(t \leq j)} \tag{2d}$$

where ϕ_t capture step function shifts in the location parameter at time t.

4.   *The Empirics of Resilience: Employment Dynamics, 1984-2014*
Figure 1 shows the relationship between each Regional Centre and Western Australia's employment dynamics over the past thirty years. Each Regional Centre has experienced and upward trend in employment, as has Western Australia, although there are clear differences in the fluctuations of employment relative to Western Australia.
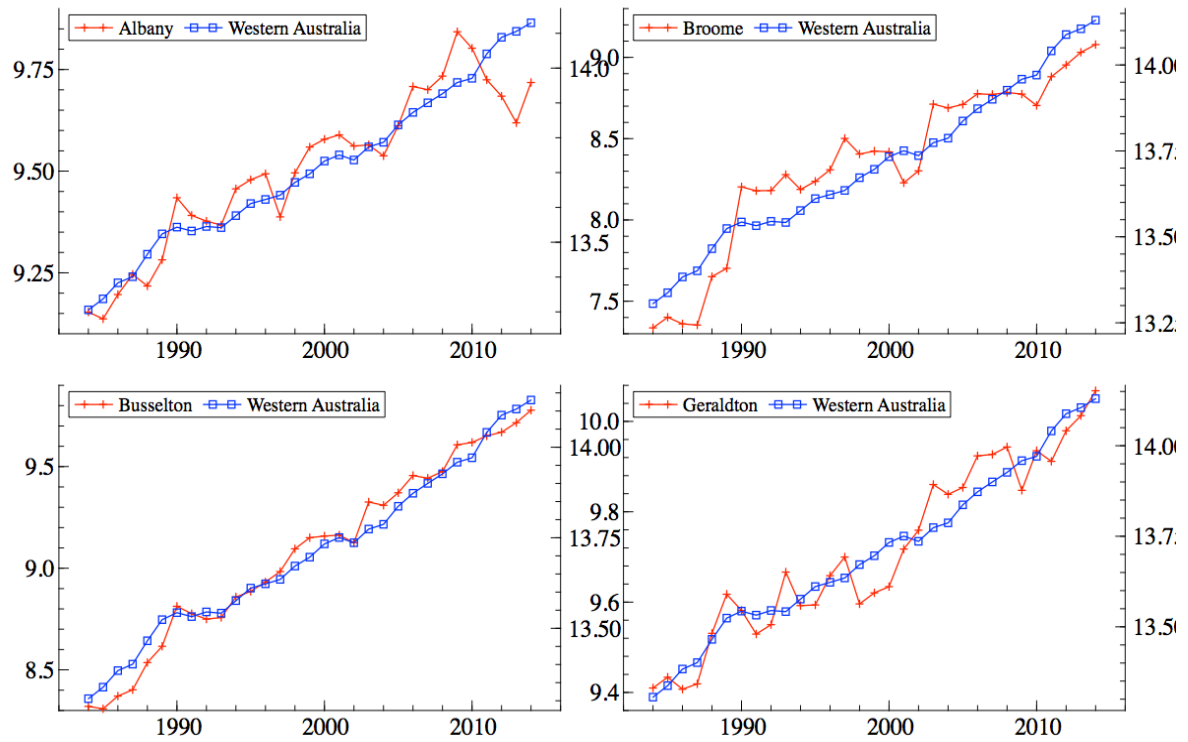
Figure 1: Relative Resilience of Localities: Employment Dynamics, 1984-2014

Table 1 shows the general model specification, not testing for structural breaks. In terms of *Relative Resilience* the key features are:

- Each of the Regional Centres lack Engineering Resilience in the sense that each locality is characterised by path dependent employment dynamics $\left(\beta_1, (1 - \delta_1)\right)$, with no tendency to return to a long-run developmental trajectory follows "shocks".

- The short run contemporaneous responsiveness of each locality to WA employment dynamics $\left(\beta_2\right)$ is fastest for Busselton followed by Broome, Albany and Geraldton.

- However, for each of the Regional Centres there is no evidence of a long run equilibrium relationship between local and Western Australia's employment dynamics (Unit Root, EG Test).

Table 1: Testing for Relative Resilience: General Model Specification

	Albany	Broome	Busselton	Geraldton
α_{0r}	4.13	-10.18	-0.45	2.32
α_1	0.008	-0.009	0.015	0.006
β_1	0.59**	0.68**	0.51**	0.38**
β_2	0.16	0.56	0.92	0.106
β_3	-0.19	0.38	-0.58	0.157
$(1-\delta_1)$	1.17	0.38	0.17	1.05
Unit Root	-2.26	-2.10	-2.5	-3.32
EG Test	-2.85	-2.16	-2.24	-3.30*
SPEC	-	Heteo, RESET	Norm, Hetero, RESET	-

Table 2 shows the final model specification for each locality resulting form a general-to-specific model selection strategy, including tests for step impulse indicators:

- For all Regional Centres there is evidence of a long-run equilibrium relationship between local and State employment (β_2).
- Other than for Albany, short run out-of-equilibrium dynamics are not significant (β_1), suggesting a return to long run development growth trajectories following "shocks".
- However, these equilibria are "shifting" in these sense that Broome, Busselton, and Geraldton have experienced step changes in their long run growth trajectories (SIS).

Table 2: Testing for Relative Resilience: Final Model Specification

	Albany	Broome	Busselton	Geraldton
α_{0r}	-	-	12.28**	-
β_1	0.64**	-	-	-
β_2	0.25**	0.63**	1.56**	0.708**
β_3	-	-	-	-
Unit Root	-2.67	386**	15.40**	5.24**
SPEC	-	-	-	-
SIS	-	1987, 1989, 2002	1989, 1996, 2002, 2010	2001, 2008

5. Implications and Conclusions.

The preliminary empirical results presented in this paper suggest that evolutionary and resilience 'thinking' has efficacy in enhancing our understanding the dynamics of regional economies. Specifically, the results of simple econometric tests for *Relative Resilience* indicates that:

- In the absence of shifts in the data generation process, each of the Regional Centres lacks *Engineering Resilience*, with no tendency to return to a long-run developmental trajectory follows external disruptions.
- However, for each of the Regional Centres there is evidence of *Ecological Resilience*, with out of equilibrium dynamics returning rapidly to long-run "shifting" equilibrium trajectories.
- Within this overall picture, there are clear differences in the timing duration, and magnitude of external disturbances.

Ongoing research building on these preliminary results, will explore the resilience of each of the Regional Centres in terms of the response of both unemployment rates and income dynamics to external "shocks". This will include scenario analysis targeted at the ways in which these localities are likely to respond to policy interventions in the data generation process. In addition, future research initiatives will unpack the complex relationships that exist between local employment dynamics and long-run developmental trajectories, focussing on the relative importance of broad economic "structural" forces and local competitiveness in determining the resilience of local economies.

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UNIVERSITIES, SPINOUTS, NETWORKS…BUT NOT REGIONS: ACADEMIC ENTREPRENEURSHIP IN REGIONAL INNOVATION SYSTEMS

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Introduction

University spinout companies are one of the key mechanisms for universities to engage in regional economic development, allowing them for a more direct and tangible involvement in such processes (Bower, 2003). Dasgupta and David (1994) argue that commercialising university knowledge is a difficult process as it involves transfer of tacit and codified knowledge in order to achieve full economic potential. This attribute makes university spinout companies the most perfect form of university-generated knowledge transfer, given their ability to envelop both codified and tacit elements of knowledge in a single form.

Knowledge created at universities resides within academics responsible for it. Being able to deliver it to a wider pool of regional 'knowledge consumers' necessitates translatory processes and developed absorptive capacity among knowledge users (Cohen and Levinthal, 1990) to capture its economic value through innovation. However, some knowledge remains difficult to 'consume', especially very complex or new, turning universities into repositories of otherwise 'indigestible' knowledge and unrealised innovation and economic potential. One way of releasing such knowledge is to involve the knowledge-creator in knowledge consumption to directly stimulate innovative potential of the knowledge. Such possibility is offered through a vehicle of university spinout company.

How universities contribute to regional economic development is pivotal, especially given the role of knowledge in literatures of endogenous growth theory (Kaldor, 1957; Romer, 1986; Lucas, 1988; Jaffe, 1989; Adams, 1990).

Although university roles are most exemplified by creating knowledge and by increasing the ability of labour force to utilise it, direct and conscious involvement in economic development activities is a relatively recent phenomenon. This has specifically been attributed to the shifts in ownership of the university-generated intellectual property (IP) from individuals to institutions employing them, attributed to US Bayh-Dole Act 1980 inspiring other countries, including the UK, to employ similar IP ownership practices.

Universities have a key responsibility in regional innovation systems (RISs) (Cooke, 1992), which identify core actors and processes in regional economic development that ensure long-term wealth generation. In a well performing RIS knowledge-producing institutions engage in knowledge transmission and translation, actively responding to regional skill shortages to improve knowledge receipt, involved in strong networks with firms, stimulated by institutionalised support mechanisms. However, there is little empirical evidence on the development of RIS's core activities related to university technology transfer and resultant outcomes. This is particularly visible in Lawton Smith et al.'s (2014) study of London's RIS, where outcomes were varied, despite the presence of strong knowledge-generating institutions. This mixed performance in London was attributed to agglomeration diseconomies and poorly developed institutional support. Nevertheless, as in many studies devoted to academic spinout companies, only exemplary cases are studied, limiting understanding of broader distribution of outcomes.

This study aims to answer the following questions: what are the outcomes of university technology commercialisation in different regional innovation systems? and, are regions playing a role in university spinout networks? Due to importance of networks in RIS, this study predominantly employs a network approach to answer the research questions.

Data

The paper focuses on 12 UK NUTS 1 regions studying 1331 spinout companies formed at 87 universities. The data was collected from an internet service dedicated to UK academic spinouts (www.spinoutsuk.co.uk) on 12th January 2014, and subsequently from UK university websites. Using FAME database, which holds detailed financial information on registered UK companies obtained from Companies House, additional data on spinout companies was collected, including location, company registration date, and shareholders. The sample so constructed is the closest reflection of the population (representative of HESA's HEBCIS's spinout numbers by institution) of such firms ever studied – details of which are largely unknown. The analytical approach undertaken utilises social network measures of betweenness centrality and aggregate constraint built from shareholder information and spinouts' university affiliation.

Results

It is found that university spinout activity is unevenly distributed across UK, with Scotland being the most active RIS in producing spinouts, whilst East Midlands and Wales the most supportive in ensuring success of their spinouts. The most successful spinout companies (Figure 1) are predominantly based in South East and London, and belong to the most cohesive (and successful) group of UK spinout companies. Noticeably, all spinout companies in the group have either been floated at a public exchange (through IPO) or sold to another business (M&A). Unlike the focus in academic entrepreneurship literature on mere IPOs as a mark of venture success (Shane, 2004b; Bonardo et al., 2011; Lawton Smith et al., 2014), evidence here presents a more varied picture of success.

Figure 1. 11-core subnetwork (N=46).
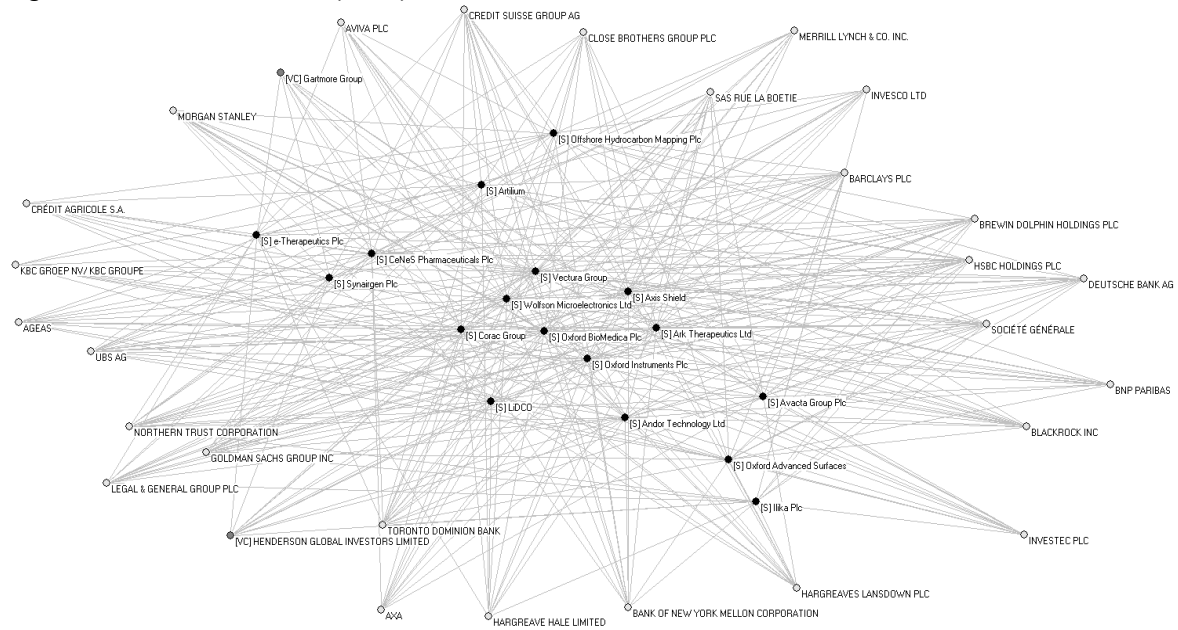
Furthermore, universities that are more intensive in generating spinout companies hold superior network positions in terms of betweenness centrality and aggregate constraint, as do successful spinout companies. However, these clear network results do not translate into clear regional patterns (Table 1). Instead, a very complex picture of regional innovation systems emerges, with uneven outcomes at intraregional level, which are not limited to individual regions, as in the case of London (Lawton Smith et al., 2014). This complexity makes it difficult to explain regional economic outcomes (Carrincazeaux and Gaschet, 2015). What this shows is that regions need to optimise their innovation systems according to their 'DNA' (Howells, 2005), as best practice learning, advised by Cooke (1992), leads to mixed-performance outcomes. Furthermore, Tödtling and Trippl (2005) suggest that regional innovation systems that are characterised by low connectivity, identified here by low betweenness centrality values, or lock-in, represented by high aggregate constraint, reveal symptoms of failure, which should be especially visible in the case of Wales or North West.

Table 1. Regional university network characteristics.

	Average betweenness centrality	Average structural holes
East Midlands	0.006	0.114
East of England	0.016	0.348
London	0.010	0.390
North East	0.006	0.374
Northern Ireland	0.012	0.062
North West	0.007	0.520
Scotland	0.011	0.273
South East	0.015	0.330
South West	0.009	0.241
Wales	0.004	0.445
West Midlands	0.006	0.359
Yorkshire and the Humber	0.005	0.299

The substantial geographical variation of survival rates of spinout companies (Table 2) is very distinct given results for firms in Wales (87.50%) and East Midlands (87.88%), in particular when observing the number of spinouts located in both regions. When contrasted with respective network measures from Table 1, no particular relation can be observed, especially given that success of spinout companies is related to higher betweenness centrality and lower aggregate constraint. Further to that, poor connectivity and lock-in should be symptomatic of RIS failure (Tödtling and Trippl, 2005), yet Wales provides contradictory evidence.

Table 2. Spinout companies formed between 1959 and 2013 and their status by region.

Region/Status	Live/Total	Total
East Midlands	87.88%	66
East of England	81.98%	111
London	77.95%	195
North East	66.67%	57
Northern Ireland	80.70%	57
North West	79.61%	103
Scotland	72.50%	280
South East	82.01%	189
South West	73.77%	61
Wales	87.50%	48
West Midlands	66.22%	74
Yorkshire and the Humber	80.00%	90
Total	77.61%	1331

Conclusion

It is concluded that the heterogeneity of knowledge generating institutions in each RIS results in diverse outcomes in terms of network structure and university spinout generation and success, indicating confused policy-making entangled in exemplary RIS practice that fails to achieve desired effects (Howells, 2005). An excellent example of this is presented by Antonioli et al. (2014), who observed a specific policy - Regional Programme for Industrial Research, Innovation and Technology Transfer that operated in Emilia-Romagna. They point out that although the programme achieved a set of outcomes, it was used more extensively by firms that would be more innovative, and had some unintended consequences, namely reduced intraregional cooperation between competing firms. Designing successful RIS policies is an uneasy task, as aside from precision of outcomes, long-term approach needs to be employed by policy-makers (Fritsch and Slavtchev, 2011). Howells (2005) argues that although elements of best practice RIS can be copied and implemented in different regional contexts, a solution originally prescribed by the author of RIS (Cooke, 1992), the effects of such solutions would be varied, due to heterogeneity of regional innovation environments, in particular industry structure (Rondé and Hussler, 2005).

One solution to recommend is to ensure that the better positioned universities play active roles in their regions (Benneworth and Charles, 2005; Charles, 2006), by connecting with other regional universities and taking the lead in their RIS. Each region has a clearly successful university that can reshape the innovation networks. Greater connectivity needs to substitute the current isolationist paths followed by UK universities. An alternative scenario is to redefine the regional boundaries of studied RIS, with each new region being university-centric. Studies of new geographical configurations could advance our understanding of RIS, which are too focused on administratively-pleasing boundaries. Finally, perhaps a completely different systemic theory could offer more explanatory capability, for example technological innovation systems, to redefine geographies along technological relatedness (Binz, 2014).

Acknowledgements

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THE SPATIAL ASPECTS OF ECONOMIC CRISIS IN GREECE

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Abstract

During the last 5 years Greece has experienced an unprecedented in peace time economic crisis that has reduced GDP by 25% and raised unemployment to 27%. Although it is unavoidable to discuss the origins of the crisis, the drivers and the conditioning factors, the main objective of this paper is to analyze its spatial impact and detect the spatial patterns of policy responses. The analysis takes a comparative approach (before and after the crisis) and provides a comprehensive understanding of the emerging spatial patterns of the crisis and an assessment of the spatial aspects of policy reaction. Special attention is given to the spatial footprint of the crisis and its impact on regional inequalities and cohesion. Clearly some regions have been affected more severely than others that have turned out to be more resilient to crisis. A number of hypotheses are advanced here relating the spatial pattern of the crisis to the idiosyncratic characteristics of the regions, their development level and their integration experience. The analysis examines whether inequalities have decreased or increased during the crisis, following a pro-cyclical or anti-cyclical pattern and relates these path-consistent/path-breaking findings to the literature of spatial inequality and growth. In addition, the paper sheds some light to the policy response to the crisis, analyzing its strength, composition and spatial dimension. The critical issue here is the ability of public policy to offset the adverse consequences of the crisis, especially in the regions affected the

most. Finally, the paper uses an econometric model of regional growth/decline in order to test for the independent or combined effects of regional characteristics and policies.

1. Introduction

Greece has suffered after 2010 an unprecedented in duration and depth economic crisis that will have long-term effects in its welfare and employment levels and prospects, but also in the way we perceive, discuss and analyze the process of European integration. The signs of the crisis were visible even earlier, as GDP, which started to decline after 2008, was reduced by almost 25%, while the unemployment rates increased to 26% in 2014 (Eurostat 2014). A complex set of theoretical propositions, ideological preoccupations, policy options and institutional arrangements are confronted with the hard evidence of what seems to be a profound market and policy failure with serious implications for Greece and perhaps Europe (De Grauwe 2013; Petrakos 2014).

It is not very clear yet what the long-term effects of the crisis will be in structure of the economy. Clearly, the previous model of development that was largely based on state-induced consumption (rather than investment), domestic demand (rather than exports), small-scale production (with limited scale effects) and dominance of the non-tradable sectors of the economy is not sustainable any more. However, several years after the beginning of the crisis, a new model of development has not emerged yet. Austerity measures have reduced the cost of production, but the drop in demand does not encourage new investment. Political uncertainty and social instability affect foreign investment while migration of young and educated people is a serious threat of the long-term prospects of the country. Although the country will not be able to return to its pre-crisis model of development, it is unclear what the new model of production will be as the crisis is still present and domestic and EU policy makers maintain different perspectives for the causes of the crisis and the policy mix that will move the economy out of this long-lasting state of flux with no clear sense of direction.

One of the critical issues that are receiving increasing attention is related to the spatial impact of the crisis. Although the crisis is still there and its final coordinates and expressions are unknown, a question arises about the spatial footprint and variants of the crisis.

Can we formulate a theory for the spatial expression of an economic crisis? Do we expect an expansion or a reduction of spatial inequality during the crisis? Has the crisis followed a pro-cyclical or anti-cyclical behavior? What type of regions won/lost the most? What are the characteristics of regions that have been affected the most by the crisis? Are there regions that have resisted successfully the spread of the crisis? Is it a matter of market dynamics or effective and timely policy responses?

What has been the policy reaction to the crisis? What have been the main policies to offset and counteract the effects of the crisis in the most severely hit regions? Has the policy reaction to the crisis followed a pro-cyclical or anti-cyclical pattern? Did the hardest hit regions receive more or less support? Has the understanding of the content and the mission of cohesion policy changed during the crisis and how? Has its design and implementation been affected and in which way?

Greece is offering an interesting case study for a number of reasons. First, Greece has been one of the countries most affected by economic crisis and therefore the spatial footprint of economic crisis is of particular importance for scientific investigation. Secondly, Greek regions have been among the most benefited from the European Union cohesion policy for many years and thus economic crisis questions the sustainability of gains under extreme circumstances. Finally, the implementation of appropriate policies in order to ameliorate the crisis impacts and paving a way out of it is still an open question that goes beyond the peculiarities of the Greek case.

This paper is aiming at providing empirical evidence regarding the evolution of regional inequalities during the economic crisis, the cyclicality of regional policy and the determinants of resilience of regions to economic downturn for the Greek regions.

2. The driving forces of the crisis

When, in early 2010, public deficit for 2009 was reported to exceed 12% of GDP, the cost of borrowing started to increase dramatically and soon thereafter financial markets closed for Greece (Bank of Greece 2011). As the EU Treaties did not have any provision for such type of crises, an ad hoc rescue mechanism was decided by the EC, the ECB and the IMF (the Troika), according to which a €110 billion loan (and later a debt haircut) was provided in combination with an austerity program and a reform program (Monastiriotis 2013). The austerity measures were supposed to eliminate the public deficit in a period of 2-3 years, mainly through wage and pension cuts and tax increases. In addition, a long list of structural reforms, including deregulation of markets, reorganization of the state and privatization were included in a Memorandum of Understanding that was signed between the Greek government and the EU, the IMF and the ECB. The austerity program was implemented according to schedule in a climate of severe political conflict and social protest with cross-the-board reduction in public spending, including wages, pensions and public investment and severe increases in taxation. On the other hand, the reform program and the privatization program were delayed in its implementation due to the indecisiveness of the government, the inability of the public sector to support the reforms and the strong public and political reaction. These programs were periodically evaluated, but also updated, with typically new conditions or goals being added after every review.

The impact of the crisis and the austerity programs was severe and beyond any projection. Greece experienced a deep recession and lost in a period of five years 25% of its GDP and about one million employment positions. Unemployment jumped in 2013 to 27% and youth unemployment reached 50%. An undermining, for the long-term prospects of the country, process of brain-drain takes place during the crisis, where the young and educated Greek population leaves massively the country in search of employment and security in the advanced EU economies. The crisis resulted in a severe social polarization and poverty, as about one-fourth of the population lives below the poverty line. The crisis and the management of the crisis has led to the collapse of the two-party political system where the Center-right and the center-left parties (ND and PASOK) were replacing each other in power and led to a political polarization which on the one hand brought the Left Party of SYRIZA in power after the January 2015 elections and on the other allowed for the rise of the extreme right.

The drop in output was much higher than initially expected and the debt to GDP ratio increased. The policy mix included the reduction of the Public Investment Program by more than 36% in the 2009-13 period, at the time that Private Investment declined by more than 42%, despite the serious reductions in labor cost and despite the reduction in State bureaucracy, because of the uncertainty that surrounds the future of the economy and the dramatic increase in taxation (Bank of Greece 2014).

What has caused this 'sudden death' in the fastest converging Eurozone Member State in the pre-2010 decade (Arghyrou and Tsoukalas, 2011)? What went so wrong and an excess deficit situation evolved to the largest economic, political and humanitarian crisis that the country has lived after the WWII? It has been claimed that there are a number of background factors at the European and the national level that have interacted with the policy reaction to the crisis that have jointly reinforced a negative spiral that after some point accelerated and had snow-ball effects (Petrakos 2014; Psycharis et al 2014).

The first factor is related to the endemic imbalances of the European economic architecture, which produces more competition than the EU South (and East) could face. The evidence suggests that the progress made in the European economic space has been highly selective, as the drivers of growth tend to favor more the advanced areas. This particular type of integration appears to be highly unbalanced, combining open markets with increasing trade deficits and public deficits in the periphery and leading to a serious redistribution of income, wealth and resources at the expense of the less attractive or less productive places (Petrakos et al. 2011, Fotopoulos et al. 2010, Petrakos et al. 2005;). In this environment, excessive budgetary discipline of the Stability and Growth Pact removed fiscal policy from their policy options (De Grauwe and Ji 2013), without offering any reliable EU level fiscal policy mechanism with a clear counter-cyclical orientation (Torres 2013, Ioannou and Stracca 2014).

The second contributor to the crisis is related to serious European and international policy failures that were related to the slow reaction of the EU authorities to the rapid isolation of Greece from bond markets in late 2009 - early 2010 that resulted to a credibility crisis and attracted the attention of speculators and the negative rhetoric, changing positions and conflicting messages from European high level officials that accelerated the crisis. This was followed by an unrealistic rescue programs that reduced severely aggregate demand with excessive cuts in public spending and a long reform agenda that was delayed and also questioned, as many of its provisions were criticized for removing all forms of social protection (Petrakos 2014).

The third reason behind the crisis is related to the characteristics of the productive system of Greece, which is dominated by small and very small enterprises that enjoy practically no scale effects and has limited competitiveness and low export-orientation, as it is dominated by the non-tradable sectors of the economy. The development model that prevailed in the country during the last 3 decades was based more on consumption and imports, expanding employment in the public sector and in the non-tradable sector that were directly dependent on the level of domestic demand and indirectly on public borrowing (in the face of extensive tax evasion) (Petrakos et al 2012, Doxiadis 2013, Giannitsis 2013, Petrakos and Pitelis 2001).

The forth reason behind the crisis is related to domestic policy failure. On the one hand the political system in Greece has used extensive clientele practices and failed to modernize the public sector and fight bureaucracy and corruption (Tsakalotos 2010), while on the other, the State mechanism is highly centralized and in most cases it discourages investment activity, while it fails to fight tax evasion of the more affluent social groups.

3. Literature review – Economic crisis and the regions

Fluctuations of regional economies over the economic cycle have been a core issue in regional analysis and policy (Richardson 1969, Stilwell 1980). However, while aspects of regional responses to economic growth have been studied more systematically and have thus created a voluminous body of research, especially in recent years, the regional impact of economic decline has been given relatively less attention and thus has yielded a limited body of research. However, the intensity, geographical coverage and the multi-dimensional expression of the recent Great Recession has placed this issue again at the attention of academic and policy debates across the globe. Although literature is still sporadic, incomplete and unbalanced the questions regarding the evolution of regional disparities, the determinants of vulnerability and resistance of regions to external shocks and the policy tools for ameliorating crisis impacts and finding a way out of the crisis have given a new impetus for a flourishing research recently.

There is a strand of literature that has related business cycles with the spatial concentration of economic activities (Berry, 1988). More specifically, waves of economic growth might give rise to regional inequality (spatial concentration), while waves of economic recession may result in decreasing regional inequality (spatial dispersion). In this line of thought, expansion cycles begin at the poles of economic activity, where the interaction of agglomeration effects and market size provides a lead over other regions. In contrast, during a recession period, these poles are more exposed to demand and supply contractions and, therefore, more likely to be negatively affected than the rest of the regions. An analysis of the evolution of regional disparities in Greece shows that inequalities are increasing during the periods of economic growth and decrease during recessions (Petrakos and Saratsis 2000, Petrakos et al 2005). However, regional inequalities during the Great Recession are an open question for regional analysis.

Another strand of literature implies that one common denominator in accounting for the spatial impact of economic crises can be found in the type and the degree of regional specialization (Thompson, 1956; Romer, 1987; Quah and Rauch, 1990; Grossman and Helpman, 1991; Paci and Usai, 2000). Excessive specialization, however, involves the danger of rendering regions more dissimilar in terms of production structure making them more vulnerable to a possible industry-specific shock (in an extreme situation, an industry-specific shock might be converted into a region-specific shock), with a negative effect on growth (Wundt, 1992; Kallioras and Petrakos, 2010; Petrakos et al. 2012). In an attempt to explain the asymmetrical impact of economic crisis across European Union Groot et al (2011) show that the level of integration and connectedness with the global economy via financial and trade linkages along with differences in sectoral composition are among the factors that account for the spatial heterogeneity in the severity of the crisis both at the country level and at the detailed regional level across Europe.

Among the factors that could be considered for the reaction of regional economies to economic crisis regards the level of urbanization. In a world with high levels of urbanization the reaction of urban areas and metropolitan regions to economic crisis acquires a prominent role (Brakman et al 2015). Urban economies are more exposed to international influences. This fact could make metropolitan areas more vulnerable to economic crisis (Hadjimichalis and Hudson 2014). However, these regions with a more differentiated productive structure, the adaptive and innovative and technologically advanced environment and the concentration of highly skilled and advanced education human capital could become protective factors for the economic decline and are more importantly for the adaptation and recovery of urban economies (Balland et al 2015).

In the recent debates regarding the regional impacts of economic crisis specific attention has been placed at what makes a region more resilient to economic downturn. However, resilience is far for being a straightforward

issue (Bristow and Healy 2015; Martin 2012; Foster 2012; Bristow, 2010; Pendall et al 2010). As regards the field of regional science, in particular, regional resilience is interwoven with (Davies, 2011): (a) the ability to withstand external pressures; (b) the capacity to respond positively to external changes; (c) the longer term adaptability (or learning capabilities); (d) the capacities of governmental authorities to engage in the appropriate kinds of planning, action and social learning. The former couple of dimensions refer to regional resilience in the short-run, while the latter refers to regional resilience in the long-run.

Empirical analysis on regional resilience albeit limited, has yielded some interesting outcomes. Fingleton et al (2012) analyze the resilience of UK regions to employment shocks for the period 1971-2010 using a seemingly unrelated regression model (SUR) specification model and find that U.K. regions differ in their resilience to these shocks mainly concerning the initial resistance to shocks rather than the recovery. Cellini and Torrisi (2014) analyzing regional resilience for a very long time-span 1890-2009 find it difficult to discern genuine differences in regional resilience since only few shocks emerge to have specific impact effects differing across regions, while the recovery experience is ever spatially homogeneous. Psycharis et al (2012) by constructing a composite regional resilience indicator set out to detect the resistance/vulnerability of Greek regions to economic crisis.

4. The spatial evolution of GDP during the crisis

The examination of the regional impact of the crisis has to take into consideration the regularities of Greek economic space, which is dominated by the presence of the metropolitan area of Athens, which includes the Attica Region, but functionally extends beyond that, embracing clusters of significant industrial activity located in a short distance beyond its borders in the neighboring regions (Petrakos and Psycharis 2015). Even without its 'satellites', the Attica region accounts for 36% of the national population and 50% of national GDP in 2012, maintaining a regional GDP per capita that is the highest in the country and 32% above the national average (Petrakos and Psycharis 2015). Given this polarized character of the Greek economic space, the first question that needs to be investigated is whether the economic crisis has affected or changed significantly the spatial patterns of growth in the Greek economy.

The analysis is based on NUTS II and NUTS III data for the Greek economy for the years 2000-12. This period clearly does not include all the years of the crisis, which is still in progress. Although it includes the years in which the crisis was deeper (2011 and 2012), final conclusions will have to wait until Eurostat releases data for the remaining years. The starting point of the data coincides with the introduction of euro and the launch of the Monetary Union. In the analysis we divide the data in two periods using the year 2008 as the turning point, as it was that last year in which the Greek GDP recorded a positive change. The first period (2000-08) can be understood as the pre-crisis period, where the development model of the country – with all its problems and inefficiencies – was still functioning and no sign of the great depression that would follow was clear. The second period (2008-12) coincides with the period of GDP decline. Although the crisis is considered to have as a starting point the year 2010, when Greece was excluded from the financial markets and made use of the EU-ECB-IMF rescue mechanism, the economy was already in a recession.

Figure 1 shows the evolution of regional GDP at the NUTS III (51 regions) and NUTS II (13 regions) level for the period 2000-12. The first observations is that the Attica region (bold line) maintains its top position and slowly increases its distance from the national average (dashed line) until the eruption of the crisis, while it seems to maintain its dominant position during the years of crisis. The second observation is that all other regions (grey lines) follow a similar pattern of growth and decline, although the speed of adjustment may vary according to their special characteristics. Finally, the Figure shows that the great majority of the regions have GDP per capita figures that are below the national average throughout the period, a feature that is related to the dominance of Athens to the Greek regional system.

The evolution of regional inequalities in the NUTS III and NUTS II regions is depicted in Figure 2. We observe that the weighted coefficient of variation is increasing throughout the period under examination, indicating the inequalities increased during the period of expansion (2000-08) and continued to increase also during the period of crisis (2008-12). The fact that the un-weighted coefficient of variation is either stable or slightly declining during the crisis indicates that the performance of the dominant Attica region has become a strong differentiating factor in the regional system of Greece.

This is better depicted in Table 1 and Figure 3, which present respectively the OLS and WLS models for the periods 2000-08 and 2008-12 for the NUTS III regions of Greece. The dependent variable (vertical axis in the Diagram) is GDP per capita change for the respective period, while the independent variable is the GDP per

capita at the beginning of each period (horizontal axis in the Diagram). The difference between OLS and WLS is that the second method takes into consideration the relative weight of each region when estimating the regression line (Petrakos and Artelaris 2008).

In the left part of the Diagram we observe that when all regions are considered as having equal weight, a convergence trend appears in both periods. The same conclusion is reached from the examination of the OLS regression results in Table 2. Therefore, one could conclude that a clear pattern of convergence appears in the Greek system of regions before and after the crisis.

The problem with this conclusion is that it is in variance with the findings of Figure 2, which indicates that regional disparities in terms of GDP per capita increased in Greece in the entire period and also ignores the realities of the Greek economic space that is dominated by the metropolitan region of Athens. When the size of each region is taken into consideration, the picture is inversed. As we see in the right side of Figure 3 and the WLS regression results in Table 2, a clear trend of divergence takes place in both periods. The significantly higher R^2 and F-statistics of the WLS estimates indicate that this model provides a better fit of the actual data and a better interpretation of reality.

What make the two methods to produce so conflicting results is, of course, the size and the performance of the Attica region. The fact that the Athens region had a superior performance before the crisis and proved to be relatively more resilient than average during the crisis in combination with the fact that it accounts for almost half the GDP of the country lead to a clear divergence trend in both periods. The careful observer, however, will notice that the speed (or pace) of convergence, as depicted by the estimated coefficient β has been cut by half in the second period.

Overall, the analysis seems to indicate that the crisis did not alter the polarized character of the Greek system of regions. Athens continues to dominate the Greek economy and its performance continues to be relatively better that the rest of the regions maintaining the previous trends of divergence, although at a slower pace.

5. The spatial patterns of change during the crisis

Which regions have lost the most during the crisis and what are their characteristics? Table 3 and Table 3A (in the Appendix) show that the regions with the highest losses during the crisis were typically island regions that their economy is based on tourism and regions hosting significant urban centers with a relative specialization in industrial activity. The regions that were less affected by the crisis are those with a relative specialization in agriculture and Athens.

The crisis hit harder the touristic Aegean and Ionian Islands as well as Crete because the social and political conflict that peaked during 2011 and 2012 with continuous demonstrations that received international coverage, as well as negative rhetoric by Government Officials in many EU countries, speculation about Grexit and negative publicity in the international media that reduced tourist flows to the country and made the impact of the crisis more dramatic. Also regions that were hosting large cities or specializing in manufacturing (like Central Macedonia and part of Continental Greece, Thrace and Thessaly) were also hit hard due to the difficulties of most industries to maintain production in the face of reduced demand, severely cut bank credit for running capital, imported supplies and export guarantees. Among the least affected by the crisis regions are those with a large share of population living in rural areas (Epirus, part of Western Greece and the Peloponnese), where a significant degree of self-consumption and self-sufficiency and a relative dependence on agriculture and subsidies operate as a stabilizer.

The least affected from all NUTS II regions is, however, Attica, which is by far the most populated and the most advanced region of the country. This performance of the Athens metropolitan area seems to generate a contradiction that needs to be further examined. Looking at Map 1 and ignoring for a moment Athens, we would clearly state that the most advanced part of the country, which includes the eastern N-S axis and the islands (in darker shade) was hit harder from the crisis than the less advanced part, which includes the western part and most border regions (lighter shade). This would led us think that the most advanced regions were also the most exposed to the crisis due to their productive structure. But, then, why Athens does not fit into this picture? Why is it less affected by the crisis, showing similar of better resilience with the agricultural areas?

Athens combines some unique for the Greek economy characteristics that affected its relative performance during the crisis. First, it is a sheltered economy, as 50% of employment in the public sector, the central government with its ministries and all important public organizations and agencies are either located in Athens or have the main part of employment concentrated in Athens. The decision making process and the operation

of a large public sector attracts a significant number of activities, including suppliers, consultancies or legal agencies that give the capital of the country a short of immunity from the collapse of demand, incomes and employment that took place elsewhere.

Second, the Athens metropolitan area is the world gate (due to its international airport and the Piraeus port) and the most internationalized part of the country with hundreds of multinational firms' branches, with a high concentration of Universities and Research Centers, as well as a diverse economic base that includes significant shares export-led industry, culture and civilization or high-tech services.

Therefore, variety, size and scale effects and a more international profile combined with a relatively higher income per capita and the shelter provided by the public sector explain to a large extent the relative resilience of Athens during the crisis. We should also keep in mind that the dominance of the city to the rest of the Greek regions is expressed with high inter-regional multipliers that transfer part of the demand in the periphery to the metropolis (Fotopoulos 2013).

The relatively better performance of Athens during the crisis should not hide the serious internal divides of the metropolis, as many inner city areas and a large part of the working class districts and the business center have suffered from massive lockouts, employment losses and widespread poverty. The picture is very different in the north and south suburbs of the city, where the high or middle high class was to a large extent immune from the crisis.

In general, it is safe to claim that the crisis has affected all regions despite income class, but it has affected more those in the low and middle-low classes. As Table 2 shows, the regions belonging to the lower 0-20% income group increased from 15 in 2008 to 19 in 2012, while those belonging to the 20-40% income group increased from 18 in 2008 to 22 in 2012. On the contrary, the regions belonging in the middle 40-60% income group declined from 12 to 6 and those belonging to the middle-high (60-80%) and high (80-100%) declined from 6 to four.

The figures of the Transition matrix show that between 2008 and 2012, 34 out of 51 NUTS III regions, despite their losses, managed to stay at the same income group, 16 moved to a lower income group and only one moved to a higher income group. Although the crisis has affected all income groups, the greatest negative impact and the greatest movement is found in the lower income groups.

In the new development map of Greece, Athens seems to have maintained and strengthened its relative position in the country as it experienced an above average growth rate during the increasing phase of the cycle and a below average drop during the declining phase of the economic cycle.

6. The policy response to the crisis

One of the critical issues during the period of crisis is related to the policy response. Given that the country was under a severe program of fiscal consolidation that required severe cuts in public spending, it is clear that the consumption component[34] of the public expenditure would have to be reduced significantly. This however, should not be the case with the Public Investment budget[35], which is expected to follow a counter-cyclical pattern in order to help the economy to deter the crisis (Lane 2003). Therefore, during the crisis and with all the restrictions that were imposed on public spending by the Troika, the optimum response would be to reduce public consumption that has a relatively lower expenditure multiplier and increase or at least maintain stable Public Investment, that has a relatively higher expenditure multiplier (Petrakos and Psycharis 2015).

This, however, did not happen. As we can see in Table 2, public investment per capita after 2008 took a clear pro-cyclical character and declined by the same rate with the economy[36]. The expenditure cuts that were foreseen in the fiscal consolidation program were across the board and did not make any differentiation with respect to the type or impact of different categories of expenditure. Public investment as a share of GDP fell throughout the period to a ratio that is below 3% of GDP, which gives little power to public policy to act as an economic stabilizer during the crisis and trigger private investment. On the basis of this evidence, it seems safe to claim that the depth of the crisis may have been less dramatic and its duration shorter, should the fiscal

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[34] Includes wages, pensions and running expenses for General Government.

[35] Includes all types of infrastructure, public subsidies to private investment, policies of human capital development and environmental protection and upgrading.

[36] Notice that in the period 2000-08 public investment was following to a certain extent an anti-cyclical pattern of change, as the economy was expanding at a satisfactory growth rate.

consolidation program was treating public investment in a different way. Treating public consumption and public investment in the same way in an effort to balance the budget, is a clear case of policy failure with consequences for the success and legitimacy of the implemented stabilization program.

Figure 4. Public Investment per capita and GDP per capita in constant 2000 prices, 2000-12.
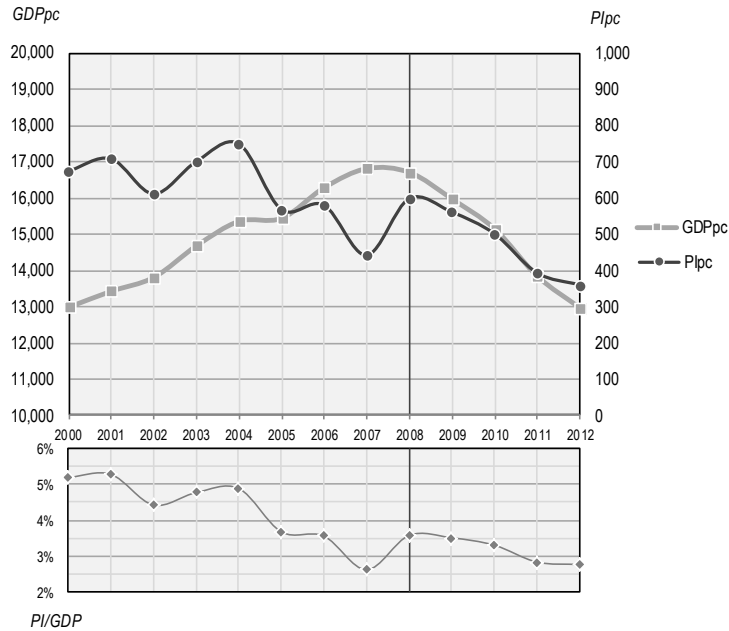
The response to the crisis has also an interesting spatial dimension. The critical question here is whether the spatial allocation of public investment funds increased or decreased regional inequality. We examine this question with the help of an econometric model where the dependent variable is the change in the per capita public investment in the period 2008-12 (ΔPUBCAP) and independent variable is the change in the per capita GDP in the same period (ΔGDPCAP):

$$\Delta PUBCAP_i = \beta 0 + \beta_1\, \Delta GDPCAP_i + \varepsilon_i \ I = 1,\ldots, 51 \text{ NUTS III regions} \qquad (2)$$

Given that both GDPCAP and PUBCAP have declined during this period, if β_1 is positive and significant, this implies that public investment cuts were deeper in the regions that experienced a deeper recession. On the contrary, if β_1 is negative, public investment cuts were less severe in the regions that experienced a greater GDP loss. Table 4 presents the results of the regression for the 2000-08 and 2008-12 period. Again the dominance of the Athens metropolitan region on the spatial economic system of Greece makes the use of a weighted econometric technique necessary. We see that the OLS model shows no relation between the two variables and has virtually no explanatory power. On the other hand, the WLS model shows a negative and statistically significant relation and has a relatively high explanatory power, especially in the second period. Although the coefficient β_1 declines in absolute value during the crisis, the message of the Table is that before and after the crisis public investment funds were used in a way that facilitated regional convergence, as the regions with the higher drop (increase) in GDP per capita were experiencing also the lower cut (increase) in public investment. This is to a large extent due to the Structural Funds provided to Greece through the Community Support Framework 2000-08 and the National Strategic Reference Framework 2007-13 that are allocated to National and Regional Operational Programs and set some limits to funding directed to the more advanced Greek regions. Since the Structural Funds Operational Programs are included in the Public Investment Program and in fact consist the greatest part of it, it is in fact EU restrictions and regulations that have made sure that the spatial allocation of funding promotes regional convergence (Petrakos and Psycharis (2015).

Table 4. Public Investment change as a function of GDP per capita change: OLS and WLS models for the NUTSIII regions of Greece for the periods 2000-08 and 2008-12

Dependent variable: ΔPUBCAP

	2000-08		2008-12	
	OLS	WLS	OLS	WLS
c	43.584*	146.281***	-39.830***	-116.8738***
Δ(GDPCAP)	-0.706	-5.251***	0.5005	-3.197***
R^2	0.01	0.49	0.01	0.57
F	0.77	48.02	0.68	65.90
N	51	51	51	51

*** Statistically significant at 1% level, ** statistically significant at 5% level, * statistically significant at 10% level

It should be noted here that the crisis had an indirect effect on Public Investment and especially on Structural Funds because it was made clear from the beginning that the Operational System used for evaluating, approving, monitoring, regulating and paying projects and programs had to be simplified and sped up. Given that at the beginning of the crisis the absorption rate of NSRF was very low (less than 4%), a number of efforts were taken to simplify procedures. During this period new financial instruments (JESSICA, JEREMIE, ETEAN) were implemented for the first time in Greece in order to promote entrepreneurship and a stronger interest than before was given to SME support programs. These efforts, however, had a very limited impact because the weakened (by the haircut and the large share of flying abroad deposits) banking sector was unable to co-finance investment activities (Petrakos 2014).

7. Conclusions

The paper has shown that the crisis has not altered in any fundamental way the spatial regularities of the Greek regional system. Inequalities continue to increase during the recession years, although at a slower pace, maintaining a process of divergence that was initiated in the early 2000. The fact that divergence trends are maintained in both the upwards and downwards phase of the economic cycle is related to a certain extent to the dual character of the economy and the dominant position of the Athens metropolitan region. While less advanced rural areas follow more or less an anti-cyclical path based on a partly subsidized agriculture, more developed intermediate cities and island experience the decline of industry and services following a pro-cyclical pattern of adjustment. In this background, Athens stands alone with its size and variety, combining scale and openness effects with a mix of tradable and sheltered activities that allowed it to preserve its dominant position in the economy.

The paper has shown also that the policy response to the crisis was pro-cyclical in the sense that public investment was reduced significantly and as a result it could not have a stabilizing role in the economy. However, its regional allocation was in favor of the regions that were more severely affected by the crisis. The econometric analysis has shown that public investment policy is an effective way to deter the crisis.

It has also shown that regions with a higher level of development, a higher support by public investment policy, a more sheltered initial environment and a 'response function' that increased the openness of the local economy, tightened its relations with the EU and at the same time improved the tradable character of the production base will experience a less severe impact of the crisis than otherwise.

In this highly diverse pattern of spatial change where destruction prevails and defensive adjustments are stronger and more visible than policy initiatives, a number of regularities emerge. They indicate that scale (and perhaps variety) effects in the form of higher level of development as well as public policies that improve the productive and social capital of the regions will play an important role (if available) to deter the crisis. They also indicate that the adjustments in the international and productive environment may also play an important role, but they work better when they go hand-in-hand. In that sense, regions that seek to internationalize their economy and at the same time work to expand the tradable sector of the economy have better chances to deter faster the crisis.

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RECASTING REGIONAL DEVELOPMENT PATHS: CONCEPTUAL RETHINKING OF THE SOCIO-ECONOMIC TRANSFORMATION PROCESS

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Abstract

The aim of the paper is to propose a broader approach to analysing the socio-economic transformation process in which a region's performance is an effect of 1) path dependency, 2) exposure to various events and connectedness to other regions' physical and economic resources and 3) its ability to react and adjust to changing circumstances. This approach can explain several aspects of resilience, including adaptation, adaptability, new path development and the role of factors such as agglomeration, clustering or related variety in the process of developing resiliency. Further research will include an analysis of socio-economic indicators and creating models using the identified roles, behaviours and achievements of regions and their actors.

1. Introduction

In the recent literature, much has been said about economic resilience and characteristics defining levels of regional resilience. However, the evolutionary approach to regional resilience is still underdeveloped in some areas. Regarding specific and unsolved issues in particular, Boschma (2015) claims that there is a need for complex and multidimensional analyses of resilience aiming at providing a better understanding of how regions can adapt to shocks without losing adaptability. Also, little is known about the integration of regions' short-term abilities to absorb shocks and long-term capacities to create new development paths. Furthermore, there is little understanding of how regions develop new paths, in part because there is a misinformed and misleading negative perception of path dependency in the process.

Thus, the aim of this paper is to rethink the regional socio-economic transformation process conceptually in the context of resilience as the perceived evolutionary process. The paper addresses the most critical issues of path dependency and resilience literature, identifying the puzzling areas of the existing research and trying to build out of them a transparent and holistic approach to recasting regional development paths.

2. Recasting regional development paths

To achieve this, we must understand the nonlinear and holistic process occurring in regions and try to explain how short-term adaptation and long-term adaptability function within a framework of path dependency. Path dependency, contrary to the original approach (Arthur, 1989; Dobusch & Kapeller, 2013; Martin & Simmie, 2008), is used as a starting point, assuming that every region is path-dependant to some extent and that the state of the economy reflects the historical events that shaped the region's path (Martin & Sunley, 2006). When an event occurs and influences the region, its impact depends on its scale and the force with which it strikes the region (Simmie & Martin, 2010). The response to the event is based on existing resources and the self-reinforcing mechanism—the same that is used when falling into lock-in. The self-reinforcing mechanism is a mechanism that causes a given variable to increase (or decrease) further after its initial increase (or decrease) (Sydow, Schreyoegg, & Koch, 2009). Thus, path dependency seems to be a form of inertia which leads to a return to an earlier development stage and even an economic renewal in the case of a negative event or which smothers new opportunities in the case of a positive event. Contrary to Martin (2010), who removes inertia from the evolutionary approach, we believe that inertia could evolve as a result of processes occurring in the regional economy. Different events reinforce adaptive behaviour and change the status quo slightly even when path dependency is strong. Many events can have a cumulative effect, like water drops wearing away a rock over time. In turn, the regional mechanism that reinforces path dependency effectively eliminates the adaptability potential. Adaptability has to overcome this mechanism by directing a group of regional actors to undertake risky and uncertain actions that may or may not be beneficial in the future. Then, adaptability has to enable the creation of another self-reinforcing mechanism, after receiving positive feedback from regional actors (Arthur, 1994; Dobusch & Kapeller, 2013; Sydow et al., 2009; Vergne & Durand, 2010), which compensate for the impact of the previous mechanism and consequently eradicate it.

3. The model of recasting regional development paths

The literature review identified three main constituents of recasting regional development paths: 1) the path dependence of a region, which may be analysed on technological, abundance of resources, institutional and behavioural levels; 2) exposure to an event and passive response, indicating a region's vulnerability to the event; and 3) the region's reactive abilities, indicating what measures regional actors undertake to minimise (or maximise) the effects of the event and catalyse the opportunities for re-organisation of its resources or even renewal of the path. Based on the literature review, we may illustrate possible interrelations between constituents, dividing 'response' into passive and reactive and 'ability to react' into adaptation and adaptability:
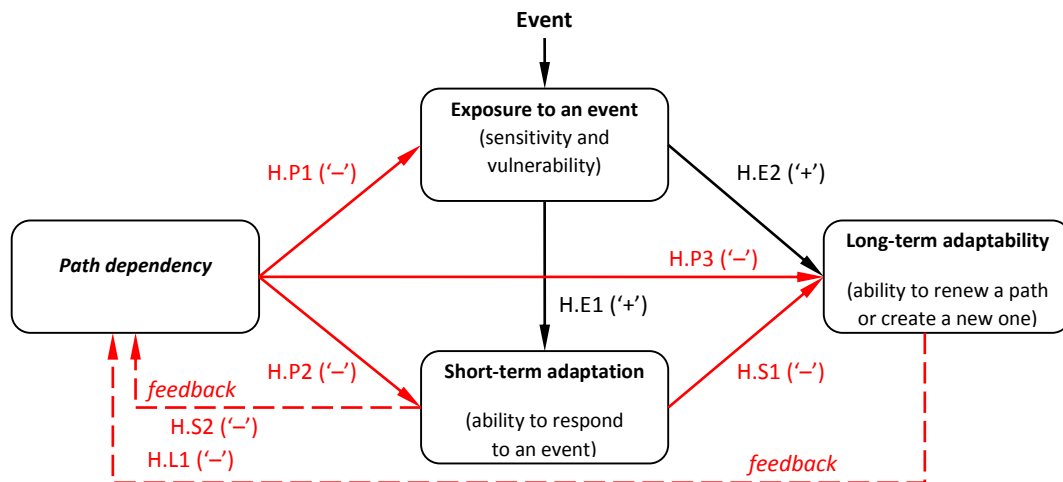
Diagram 1.   Structure of the model of recasting regional development paths with hypotheses indicated

Our main hypothesis suggests both that long-term adaptability drives the most successful chance of recasting a region's development path and that short-term adaptation can decrease path dependency through path renewal:

> *H.1   The trade-off between adaptation to short-term shocks and adaptability in recasting a regional development path is the result of the interaction between path dependency, event exposure and reactive ability.*

However, finding the trade-off between adaptation and adaptability is not easy. We found that path dependence is an inevitable phenomenon that leads to specialisation of the region based on a high level of technical interrelatedness which causes a higher sensitivity to shocks. At the same time, path dependency limits adaptability by reducing opportunities for renewal. Good adaptation to shocks causes weaker adaptability potential, but shocks could trigger change. Then, as they provide feedback, adaptation and adaptability could reinforce path dependency and start the process again. Thus, we create various hypotheses according to each interrelation:

− Path-dependency impact:
> *H.P1   The higher the path dependency of a region, the more exposed and sensitive to an event the region is.*
> *H.P2   The higher the path dependency of a region, the lower the ability to adapt to the effects of the event in the short term.*
> *H.P3   The higher the path dependency of a region, the lower the level of adaptability in the long term.*

− Exposure impact:
> *H.E1   The more a region is exposed to and affected by an event, the more short-term adaptation abilities it has.*
> *H.E2   The more a region is exposed to and affected by an event, the more long-term adaptability it has.*

- Short-term ability's impact:
  H.S1   The higher a region's short-term abilities to adapt, the less long-term adaptability it has.

- Feedback completing the development path recasting process:
  H.S2   An increase in a region's short-term abilities to adapt causes less path dependency.
  H.L1   An increase in a region's long-term adaptabilities causes less path dependency.

The model shows how a shock or evolution may initiate the socio-economic transformation process, leading to the recasting of regional development path, and why this transformation depends on the extent to which a region is exposed to the trigger-initiator, the region's ability to respond to the event and how the existence and impact of path dependency affects this process. Further research will include an analysis of socio-economic indicators and creating models using the identified roles, behaviours and achievements of regions and their actors.

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THE INCREASING ROLE OF GLOBAL REGIONALISATION IN THE POST-BIPOLAR WORLD

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The analysis of social and economical phenomena and processes that take place in the global geo-economic space under influence of the financial crisis is indicative of the change of world order paradigm in the nearest future, transfer to the new level of global transformations. In this regard, search and substantiation of the most efficient mechanisms of relationships between countries which are leaders in the world economics and countries which are trying to take up leader position, is taking place.

It is an indubitable fact the US hegemony in the globalized word is coming to a close. There is a running process of new world order creation, and places of new leader countries in this process are being established. A global economic system with several centers (four, five or six) is going to take over the existing system.

In parallel with this, there also are domestic interests that unite countries with each other, as currently it is important for each country to be strong not only in its domestic policy, but also capable of cooperation around mutual global problems. We are now witnessing the new global process – **easternization**, i. e. empowerment of the East.

It is being formed in wide sense, as India, China and Russia are mature countries with developed economy; and Korea and Indonesia may eventually join them. This will lead to shift of center-of-gravity in global economy from Europe and the USA towards the East. Yet this is not the most important issue. The main thing is that global economic centers will co-exist.

Globalization is transgressing in its development to a higher stage – stage of **global regionalization**, thus becoming one of the most important development trends of the modern world. Thereby, it acts as integration of local communities and shows itself in localization, borders formation between territorial and social complexes, emerging of self-sufficient economic and political formations, preservation of cultural differences of ethnic and social groups, and intensification of their feeling of difference.

Global regionalization processes have activated simultaneously at several levels: macrolevel, mesolevel and microlevel. At macrolevel regionalization shows itself, on one side, in urge of local civilizations to protect themselves from the outside expansion. This leads to the so called "clash of civilizations", which may become a key problem of the new world order. In the modern world the main conflict will occur between different types of civilizations, as inter-civilization differences are inherently fundamental.

Regionalization at this level is accompanied by the fact that several civilizations, having absorbed relatively neutral social area, gradually outline borders of permanently conflictogenic areas – lines of "tectonic" faults in the places of civilization "plates" touching. Fault lines between civilizations are future front lines. Apparently, central axis of the world policy in future will be an economic conflict between the West and the other world. This is due to the fact that the West is trying to impose its values as universal, keep military advantage and establish its economic interests – this all runs into resistance. From the other side, **regionalization** at the macrolevel is shown in the fact that postindustrial countries, being initiators of globalism, are moving themselves towards regionalization, by creating closed and self-sufficient systems. This is in particularly evidenced by closing of trade and investments streams within postindustrial system, strict borders of immigration policy in the West, etc. Therefore, the Western countries, having secured advantage over agricultural states, are interested in maintaining and sustaining their own stability and independence.

At the mesolevel global regionalization which is of supernational nature, is shown in the urge of integration of some territories, which are parts of different countries for example, creation of the European Union. Another example is Asia-Pacific Region (APR), which includes over 40 countries. Here the new center of world economy and policy is being created.

At the microlevel the processes of global regionalization have evolved within national states. Here regionalization is related to diversity strengthening of economic or political development of various territorial communities within the country, their urge for cultural independence, sometimes even for to separatism. In this context regionalization, which is accompanied by economic and ethnocultural differentiation, often leads to political splitting, conflicts and instability in previously integral state formations. In the context of global economic transformations, neither China, or Russia, or the USA and other countries will entirely dominate. Most likely, there will be influence of several strong countries. Other countries, such as the United Arab Emirates, may also join them.

In the post-bipolar world strengthening of regionalism is accompanied by increasing role of boundary states located "on the outskirts" of economic space. There stands out a group of countries which efficiently uses boundary functions between post-Soviet countries and Western Europe (Finland, Turkey, Cyprus etc.). Finland is the only member of the European Union which is a direct neighbor of the great post-Soviet country – Russia. Turkey and Cyprus, located at the European periphery, have appeared especially attractive for tourism and as a tax harbor, accordingly.

Simultaneously, at all continents there emerge or strengthen integrated regional alliances. The European Union (EU) and North American Free Trade Agreement (NAFTA) stand among them, accruing almost 40% of world GDP. Such organizations as Asia-Pacific Economic Cooperation (APEC), Association of Southeast Asian Nations, Organization of Petroleum-Exporting Countries (OPEC) and many other regional alliances are created. The EU and slightly lagging APEC are leading in the structure of world export among regional alliances.

In the second half of the 20th century the specific weight of Asia among the planet population increased from 55 to 60%, whereas European and North American ratio decreased from 31 to 22%. During this period specific weight of Asia in the world GDP increased from 17 to 35%, and in Europe and North America it decreased from 72 to 52%. World leaders' weight has changed. The US ratio of population decreased from 6 to 5%, and in the world GDP – from 31 to 21%. Ratio of China among the world population has remained at 21% level, whereas its specific weight in the world GDP increased from 3 to 10%.

The end of the 20th century was marked by considerable strengthening of positions in the world economy of such regional integration blocs as the EU, NAFTA, APEC, MERCOSUR, ASEAN etc. They are presented by strong coalitions of countries that pursue their national economic interests by provision of, primarily, favorable conditions for realization of international cooperation on regional scale. Practice of big integrating regional alliances creation gives ground to bear on external and inner unity concept. In the European Union such example is its regional and structural policy, which has changed the idea of integration unity.

Growth of trends for positions strengthening of countries' regional alliances, intensification of interstate regional cooperation and emerging of regional form of world economic development unevenness has specified the fact that strengthening of financial stability and competent positions at the world market has began to take place together with creation of wider economic space.
For many regions this process is going on hyperslow, though regions gain more and more weight in the world economy now. The problem of inner and outer integration is characteristic not only for the EU and is considered not only by economists. Famous American political analyst Shivley Phillips indicates that regional integration is not only consolidation of big and small forces; first of all, it is availability of a strong positive effect which will be impossible in case of separate economic management. However, in this case general coordination of the whole community efforts is of great importance.

The USA is already not claiming for domination, at the best case the role of this country will be as the first among equals. The majority of the US elite understand that the world now is completely different. It is extremely difficult to anticipate the future and ways of solving key problems that society in general or any particular country faces. Since globalization development the substantial improvement of living conditions has taken place practically in all countries. Though, the most impressive results were achieved by countries with developed economy and only several developing countries.

Spread increase between income in the countries with high level of income and countries with low level of income cannot but give rise to concern. Also the matter of high concern is that considerable number of our planet population is below the poverty line. However, it might be a mistake to come to an early decision that globalization is the cause of it, and that nothing can be done in order to improve this situation. On the contrary, the countries with low level of income could not integrate into the world economy as quickly as other countries, partially due to their chosen policy and factors that cannot be controlled. Not a single country, especially the poorest, can afford to stay isolated from the world economy. Specifically this way will provide access of all people in all countries to the benefits of globalization.

PROXIMITIES: THE ILLUSION OF A-SPATIALITY AND THE IMPORTANCE OF PLACE

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The 'proximities approach' now dominates the discussion of the geography of knowledge creation but a much-needed criticism of it is missing. The proximities approach identifies five kinds of proximities, geographical, cognitive, institutional, relational and organizational, and argues that any one of the proximities is sufficient to allow the exchange of tacit knowledge.

The argument goes that some degree of proximity is required to exchange tacit knowledge; to reduce co-ordination costs, agents need to be proximate on at least one dimension. Furthermore, agents can make trade-offs between the proximities. Being geographically proximities is equally effective as cognitive or organizational proximity in case the agents are located at a distance. This mechanism relies on a distinction between codified and tacit knowledge that is increasingly questioned. Rather than tacit or codified, the key characteristic of knowledge is now argued to be its contextual nature. Knowledge transfer is not impaired because of its tacitness but because agents belong to different communities of practice. This complicates knowledge transfer because agents have to become 'socialized' in the other community to a certain degree. It requires a process of social interaction and cannot be accomplished simply by making a 'trade-off' between different kinds of proximities. Nor does the fact that there is nothing intrinsically local about the exchange of tacit knowledge, as the proximities approach underlines, imply that tact knowledge creation is distributed evenly across geographical space. It depends on, for example, access to research facilities in specific places. Elegant as the 'trade-off' idea may be, it suffers from a number of serious flaws.

- The proximities approach is theoretically uncritical, using concepts from various literatures without scrutinizing their validity and applicability. Most problematically the proximities approach uncritically connects individual characteristics (relational proximity), firm characteristics (organizational proximity) and community characteristics (institutional proximity) in the explanation of knowledge creation.
- The proximities approach is conceptually messy as important conceptual overlaps exist between the proximities.
- The proximities approach is simplistic on knowledge creation, ignoring its embedded nature. Rather than being a series of transactions between agents, knowledge creation is a process of social interaction that happens in communities of practice.
- The proximities approach is static and lacks a time dimension. Defining proximities as relational states between which trade-offs can be made, overlooks the fundamentally dynamic nature of relations.
- The proximities approach has a simplistic view of geography, reducing it to a near-far dichotomy.

The proximities approach fundamentally ignores the need to build relationships over time. Proximities are outcomes of on-going social interaction. The non-geographical proximities are not as a-spatial as the proximities approach suggests. Relations between agents are characterized by repeated moments of temporary proximity, e.g. meetings and conferences. Focusing on the instances where knowledge creation in such relationships benefits from cognitive or relational proximity to overcome geographical distance only gives the illusion of a-spatiality. An explanation of the geography of knowledge must account for the interaction between social space and the physical place.

Empirical work to support the proximities approach actually further questions it. Hansen (2015) conducts an empirical study to the substitution or overlap of the various proximities between Danish 'cleantech' firms and their local, national and European partners in innovation projects. Substitution refers to the idea that non-geographical forms of proximity reduce co-ordination costs to enable knowledge creation over distance. Overlap means that geographical and non-geographical proximities may reinforce one another. In his empirical analysis, Hansen argues that "the geographical dimension is the central independent variable, while the remaining four proximity dimensions are the independent variables." This is a highly stylized way of looking at knowledge creation because geographical proximity, or distance rather, does not cause proximity on the other dimensions. That results from a process of social interaction. Calculating merely correlations between the proximities, Hansen finds that, "Collaborations with partners in neighbouring counties … [have] higher social distance[s]" and that, "Long-distance collaborations are significantly more likely between partners with established social relationships." Correlations, of course, say nothing about any causal mechanism. In fact, Hansen's qualitative

findings tell a very different story. He finds that, "Partners have collaborated over a number of years … [and] a targeted effort was made to build strong social relations." This clearly suggests that, in as far as trade-offs between proximities are possible, they have to be developed first.

Huber (2012) looks at the interrelation between spatial, social and cognitive proximity in the Cambridge IT cluster and asks which types and levels of proximity are critical for knowledge networks. Focusing on relationships between individuals within the Cambridge IT cluster, Huber avoids the firm-level of analysis. However, he ignores that fact that professional networks such as the Cambridge IT cluster are communities of practice and that its members share norms, values, habits and routines that facilitate knowledge creation. Any of the proximities Huber observed may be the result of individuals being socialized in the same community of practice, rather characteristics of a particular relationship. Huber's (2012) qualitative observations further question his findings. For example, he observes that "The vast majority of the respondents have initially formed their relationships … in either work-related contexts or in taking the same course at university."

To explain the geography of knowledge creation, the process of knowledge creation must be understood. Following Lester and Piore (2004), informal and formal knowledge creation are different phases of innovation. Informal knowledge creation addresses ambiguity in terms of technologies, market opportunities and feasible trajectories of development. Once sorted, formal innovation projects can be initiated. Lester and Piore (2004) refer to this informal stage of knowledge creation as "conversations." Conversations pertain to the 'interpretative' phase of innovation, which is an "on-going activity out of which something innovative emerges. Interpretative activities are "open-ended conversations among people from different professional and organizational backgrounds."

An explanation for the geography of knowledge creation, needs to be found along two lines: first, it must explain why individuals bridge distance; second, it must account for the fact that not all geographical places are equally conducive for knowledge creation. Bridging distance for knowledge creation builds on the following considerations:

- Distance is more accurately expressed in terms of the *effort* required to bridge it.
- Knowledge creation is related to *preference* and personal *choice*: individuals who have developed a bond are more likely to bridge distance.
- *Dependency* on and the spatial *distribution* of important contacts also affects individuals' willingness to bridge distance.

Geographical distance is thus more accurately seen as a dynamic trade-off between effort, preference and dependency. This 'distance dynamic' explains to what extent bridging distance matters for knowledge creation.

Quality of place, explains how the combination of traditional agglomeration advantages and Jacobian externalities connects individuals to places, either as residents or as visitors. Traditional agglomeration advantages very much depend on [an individual's] place of … residence. Jacobian externalities summarized by Richard Florida as 'what is there', 'who is there', and 'what is going on', point at the role of socio-cultural diversity and the need for attractive amenities for knowledge creation. Place dynamics (socio-cultural diversity and attractive amenities) explain why it matters for knowledge creation to be in some places rather than others. The interaction between place and distance dynamics explains where individuals choose to connect social space and physical place accounting for both their preferences and the opportunities and restrictions of their physical world.

A geographical typology of conversations can now be developed. Some conversations are highly dependent on specific research facilities that are available in only a few places. This is the case with medical conversations, for example on aging, or engineering conversations, for example on rocket engines. Other conversations are largely independent of place, such as conversations among film critics. In yet other conversations, the individuals involved will be very willing to bridge distance, for example, when a conversation has global relevance. Finally, the relevance of a conversation may be limited to a local level and few individuals from outside the region will engage. Based on the interaction of distance and place dynamics, four typologies of conversations emerge as in
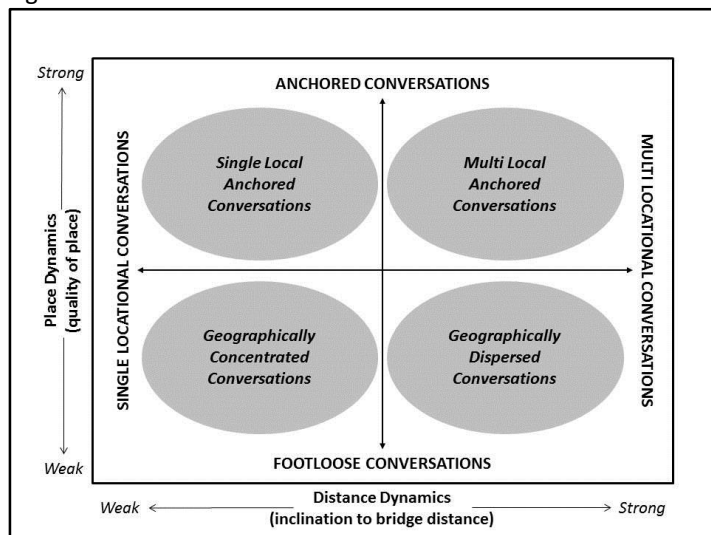
Figure 1.

Figure 14: Geographical typologies of conversations

The four typologies offer a more realistic way of understanding the geography of knowledge creation because the typologies address the key weaknesses of the proximities approach. Introducing distance and place dynamics overcomes the geographical simplicity of the proximities approach and focusing on conversations rather than on knowledge creation in general recognizes that the geographical dimension of knowledge creation depends on the kind of knowledge being created and the individuals involved in its creation.

Hansen, T. (2015), Substitution or overlap: The relations between geographical and non-spatial proximity dimensions in collaborative innovation projects, *Regional Studies*, 49(10): 1672-1684.
Huber, F. (2012), On the role and interrelationship of spatial, social and cognitive proximity, *Regional Studies*, 46(9): 1169-1182.
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HOW DID GB REGIONS FARE OVER THE GLOBAL FINANCIAL CRISIS: CITY RESILIENCE VS. PERIPHERAL PAIN

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Abstract:
In Sensier (2014) I investigated the classical business cycle for UK GDP, unemployment and national employment as well as for the Government Office Region employment (over the sample 1992 to 2014). I confirm what has already been reported in the literature that the fall in UK employment over the 2008 recession of 2.4% was less severe than the loss of GDP (at 6%) and the peak level of employment was returned to in 2012q3 one year before GDP in 2013q3. BUT the resilience of national employment masks vast sub-regional differences.
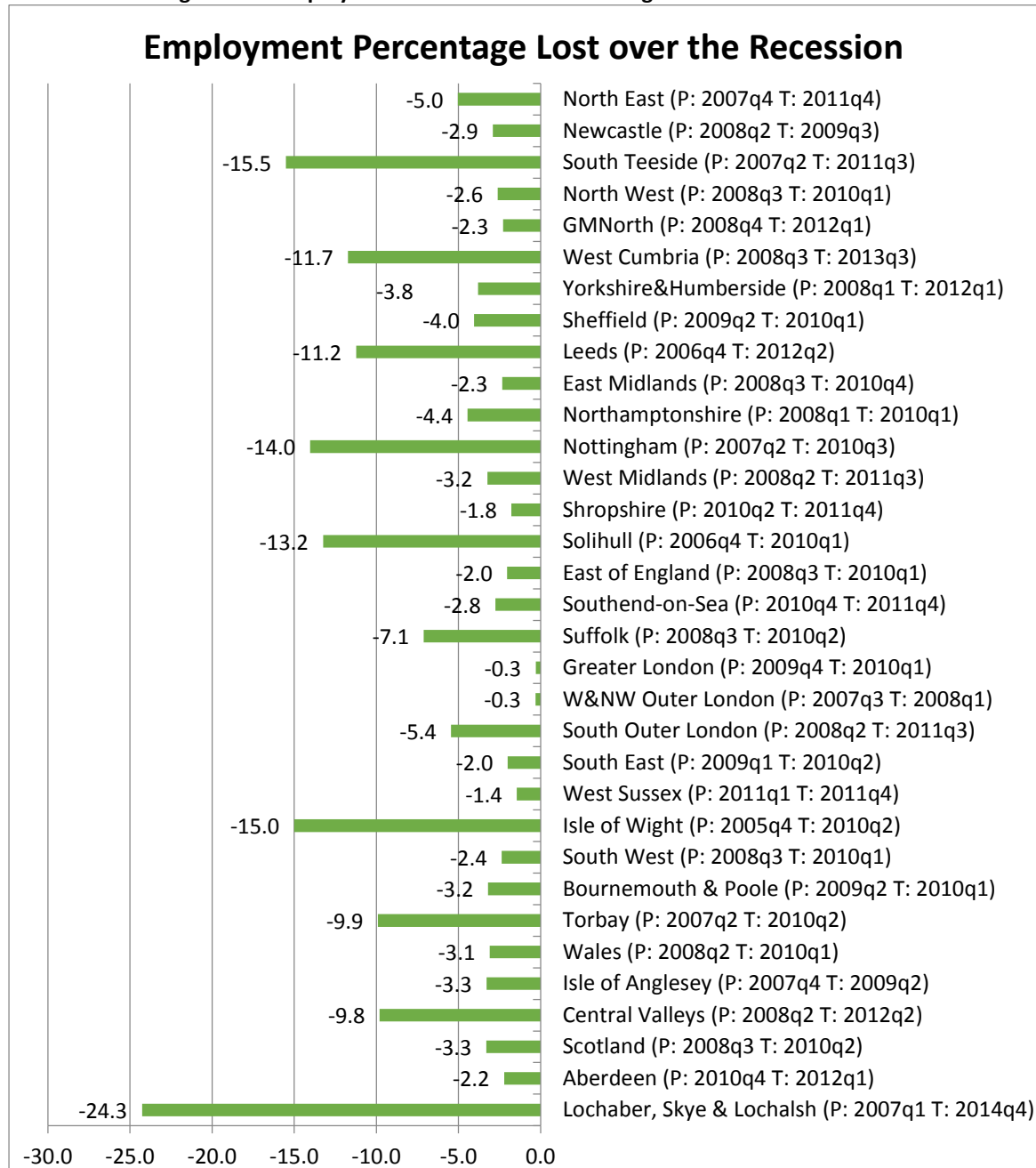
In this paper I analyse a lower level of regional disaggregation (128 sub-regions at the NUTS 3 level, 2007 definition) allowing a comparison of the resilience of employment across Great Britain's cities with their peripheral regions. I utilise employment estimates from the ONS annual population survey to investigate sub-

regions across Great Britain. First I date the peak and trough turning points of the business cycle in employment for each-sub region. These differ for all sub-regions as they lead or lag the onset of the global financial crisis in 2008. Although most sub-regions have recovered their pre-recession employment peaks there are still 35 regions are yet to recover. I calculate the percentage of employment lost over the recession as the employment at the peak (P) less that at the trough (T) divided by the peak level:

$$\Delta Employment\_Lost = 100 * \left(E_P - E_T\right) \big/ \left(E_P\right)$$

Chart 1 lists all NUTS 1 region percentage employment lost over the recession along with the NUTS 3 sub-regions within these that had the smallest and the greatest employment falls over the recession. The peak and trough turning points are also noted for each region. Of note is that the largest employment lost in England was in South Teeside (containing Middlesbrough and Redcar) of 15.5% (yet to recover its 2007q2 peak by 2015q2) and then in Scotland the region of Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute with a loss of 24.3%. The largest loss in Wales was in the Central Valleys of 9.8%. Two English cities show large losses with Leeds losing 11.2% employment over the recession and Nottingham at 14%. Generally though cities lost smaller amounts and recovered quicker as in Sheffield with 4% employment loss and Aberdeen with 2.2%.

Employment Percentage Lost over the Recession

Region	Value
North East (P: 2007q4 T: 2011q4)	-5.0
Newcastle (P: 2008q2 T: 2009q3)	-2.9
South Teeside (P: 2007q2 T: 2011q3)	-15.5
North West (P: 2008q3 T: 2010q1)	-2.6
GMNorth (P: 2008q4 T: 2012q1)	-2.3
West Cumbria (P: 2008q3 T: 2013q3)	-11.7
Yorkshire&Humberside (P: 2008q1 T: 2012q1)	-3.8
Sheffield (P: 2009q2 T: 2010q1)	-4.0
Leeds (P: 2006q4 T: 2012q2)	-11.2
East Midlands (P: 2008q3 T: 2010q4)	-2.3
Northamptonshire (P: 2008q1 T: 2010q1)	-4.4
Nottingham (P: 2007q2 T: 2010q3)	-14.0
West Midlands (P: 2008q2 T: 2011q3)	-3.2
Shropshire (P: 2010q2 T: 2011q4)	-1.8
Solihull (P: 2006q4 T: 2010q1)	-13.2
East of England (P: 2008q3 T: 2010q1)	-2.0
Southend-on-Sea (P: 2010q4 T: 2011q4)	-2.8
Suffolk (P: 2008q3 T: 2010q2)	-7.1
Greater London (P: 2009q4 T: 2010q1)	-0.3
W&NW Outer London (P: 2007q3 T: 2008q1)	-0.3
South Outer London (P: 2008q2 T: 2011q3)	-5.4
South East (P: 2009q1 T: 2010q2)	-2.0
West Sussex (P: 2011q1 T: 2011q4)	-1.4
Isle of Wight (P: 2005q4 T: 2010q2)	-15.0
South West (P: 2008q3 T: 2010q1)	-2.4
Bournemouth & Poole (P: 2009q2 T: 2010q1)	-3.2
Torbay (P: 2007q2 T: 2010q2)	-9.9
Wales (P: 2008q2 T: 2010q1)	-3.1
Isle of Anglesey (P: 2007q4 T: 2009q2)	-3.3
Central Valleys (P: 2008q2 T: 2012q2)	-9.8
Scotland (P: 2008q3 T: 2010q2)	-3.3
Aberdeen (P: 2010q4 T: 2012q1)	-2.2
Lochaber, Skye & Lochalsh (P: 2007q1 T: 2014q4)	-24.3

Note: each Government Office Region (GOR) is shown with the smallest and then largest employment loss over the recession in the NUTS 3 sub-regions within the GOR. Recession Peak (P) dates are given followed by Trough (T) dates in parenthesis after the region name.

Lee (2014) has established that cities with higher proportions of skilled populations experienced lower increases in unemployment. Lee also found that higher levels of employment in the financial services, manufacturing or construction sectors were linked to larger increases in unemployment. As in Lee (2014) I apply cross-section regressions to see if there is a link between the fall in employment over the recession and a number of factors (crucially this work differs from Lee in the use of flexible rather than fixed turning points and the coverage of all of Great Britain rather than 60 city regions). We test these factors but also utilise ESPON data from a recent project on European Regional Resilience where we test geographical location (either city or peripheral region or if the region is located in a densely population coastal region). We also analyse the length of time to the peak how long it takes to recover (if this is reached) along with, shares of employment in different occupational groups. The cross-section regression is as follows:

$$\Delta Employment\_Lost = \alpha + \beta_1 Industry_{2007} + \beta_2 Skills_{2007} + \beta_3 RegionDummy$$
$$+ \beta_4 LocationDummy + \beta_5 PeakTime + \beta_6 City / Peripheral + \varepsilon_i$$

Some initial results are shown in Table 1 where we see higher employment losses are negatively related to being in a city but positively related to being a peripheral region. Greater employment loss over the recession is also associated with being in a densely populated coastal region. Manufacturing and skills are negatively related to greater loss. Greater loss is negatively related to an earlier peak being reached. Specialisation is positive and significant showing that greater loss is associated with a less diverse region (as a higher number here means greater specialisation). The smallest average loss was for the 5 sub-regions within Greater London and the dummy variable for London is large and significantly negatively related to greater loss.

Table 1: Cross-section Regression Results

DV: Employment Lost	Model 1: city		Model 2: peripheral	
	Coeff	t-stat	Coeff	t-stat
Manu_07	-0.14	-1.42	-0.13	-1.36
NVQ_L407	-0.11*	-2.43	-0.10*	-2.09
city	-0.90*	-1.76		
peripheral			0.96*	1.94
coastcode4	0.80	1.24	0.81	1.25
peak_row	-0.24*	-4.1	-0.22*	-3.92
specialise	0.91*	2.56	0.89*	2.53
NWregion	-1.88	-1.53	-1.58	-1.34
YHregion	-1.14	-0.82	-0.93	0.69
EMregion	-0.16	-0.11	-0.17	-0.12
WMregion	-0.64	-0.46	-0.73	-0.57
ETregion	-3.69*	-2.85	-3.93*	-2.73
LNregion	-6.74*	-3.29	-6.44*	-3.25
SEregion	-2.58*	-1.76	-2.53*	-1.83
SWregion	-1.60	-1.25	-1.37	-1.16
WLregion	-3.47*	-2.3	-3.3*	-2.37
SCregion	0.81	0.59	1.08	0.83
constant	16.3*	5.18	14.3*	4.71
N	128		128	
R^2	0.4318		0.4339	

How did London "Get away with it"? Overman (2011) suggests the larger proportion of middle income earners and jobs in the service industry helped London recover quicker. London has the largest and most diverse labour market. Bank bailouts helped save the banking sector which also propped up this region. We discuss our results with a view to the future devolution deals and the branding of the Northern Powerhouse to see if these can help stimulate growth in areas outside of London.

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URBAN SPRAWL AND INTERSTITIAL SPACES IN SANTIAGO DE CHILE: THE ROLE AND IMPLICATIONS OF UNDEVELOPED AREAS AND OPEN TRACTS IN PROCESSES OF URBAN EXPANSION

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Although urban sprawl has been widely discussed, it is still an open agenda in regards of definition, consequences and ideological implications mainly driven by the housing debate (Barnes, K. et al. 2001; Jaret et al., 2009; Soule, D. 2006). Apart from differences, there is a common view that consider sprawl as a dynamic process of fragmented growth that also illustrates more complex stages of development characterized by social diversity, polycentricity and an incremental functional self-sufficiency which confirms sprawl more as a 'process' than a static scattered landscape (Phelps, 2012; Gunnar and Inger-Lise, 2011; Gallent and Shaw, 2007).

All in all, studies in urban sprawl have been traditionally focused on the production of built-up spaces leaving out the presence of a wide spectrum of undeveloped areas and open tracts which have been left inside the expansion such as geographical restrictions, open spaces, brownfields, landfills, farmlands, forest lands, green corridors, public spaces, military facilities, infrastructural lands, buffers of security, power plants, industrial facilities and others that conform a less addressed dimension of sprawl, somehow as random outcomes from the planning system itself and that affect sprawl's definitions as well implications in planning (Galster et.al. 2001; Siedentop and Fina, 2010; Torrens, 2006). Considering the variety of open tracts, differences in their origins and conceptual approaches, we termed these lands as 'interstitial spaces' as a way of reinforce its presence as another component of urban sprawl.

Interstitial spaces emerge by different reasons being mainly economic – developers and plans allocate new developments on cheaper outer areas (Holcombe, 1999; Clawson, 1962), social – people prefer to live near the countryside (Phelps et al. 2010; Gunnar and Inger-Lise, 2011), and techno-political – regulations and plans include interstitial areas as restrictions or reservoirs for future expansions or intended growth (Harvey and Works, 2002; Talen, 2010)

THE IMPORTANCE OF NON-URBANIZED AREAS
The importance of interstitial spaces appears as 'instrumental', considering they are part of sprawl index (Galster et al. 2001; Siedentop and Fina, 2010; Barnes et al. 2001), socio-environmental, considering open tracts make contributions in terms of biodiversity, ecosystem services and spatial heterogeneity (Zhang et al, 2012; Sandström, 2002; Lafortezza et al, 2013; La Rosa and Privitera, 2013) and economic as they can increase land-values of surroundings (Meyer-Cech and Seher, 2013; Thomas and Littlewwod, S. 2010).

CONCEPTUAL APPROACHES FOR NON-URBANIZED AREAS
The presence of 'gaps' in cities has been addressed by the literature always referring to specific categories of interstitiality and not always to explain urban sprawl. So, conceptualization of 'vacant lands' (Northam, 1971; Foo et al., 2013), 'undeveloped lands' (Zhang et al. 2012), 'open tracts' (Gillham, 2002), 'non-places' (Auge, 1995), 'terrain vague' (De Solá-Morales, 2002; Mariani and Barron, 2014), 'interfragmentary spaces' (Vidal, 2002) 'non-urbanized areas' (La Rosa and Privitera, 2013; La Greca, et al, 2011), 'Wildspaces' (Jorgensen and Keenan, 2012) emerge as specific or partial contributions and not for the whole spectrum of urban sprawl's gaps and its potentials. Some of those potentials are directly related to the value of undensified lands and the presence of the countryside, which somehow has been recognized and aimed to be preserved[37].

THE 'INTERSTITIAL SPACE' IN THE POST-SUBURBAN EXPANSION
The 'interstitial space' as concept has been hardly used in planning emerging only for specific issues at architectonic or urban scales and not necessarily for describing sprawl characteristics (Vidal, 2002; Mohammadi et al, 2012; Gallent and Shaw, 2007; Gandi, 2009; Mubi, 2013). After all and aimed to include the interstitial space as another component of urban sprawl, it can be defined as:

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[37] See the 'Finger Plan' of Copenhagen (Caspersen, et al, 2006; Galland and Enemark, 2012) and urban plans for the 'Randstad' zone and the 'Green-Heart' in Netherlands (Kühn, 2003; Fazal et al, 2012; Faludi et al. 1996) and examples from the UK and other European countries regarding the 'Green-Belt' (Gallent and Shaw, 2007; Thomas and Littlewwod, 2010)

'A spatial, physical and temporary 'in-between' entity – used to embrace to whole spectrum of urban gaps that shape urban sprawl – that can adjust its dynamics in regards of its surroundings or simply remains independent. It can embrace from planned open spaces until random tracts and unplanned facilities in between built-up areas and can emerge at different geographical scales' (Author's definition).

Thereby, an architectonic scale is used to describe in-between spaces of '*proximity*' – such as narrow streets. Spaces such as squares or parks are described by the '*urban interstitial space*'. The '*metropolitan* interstice' is used to describe spaces between two or more administrative areas such as rivers, metropolitan parks, geographical restrictions or industrial facilities. A '*regional*' scale is used for spaces between different towns – such as conurbation zones – and finally, interstitial spaces of '*remoteness*' that describes large geographical areas between urbanized regions.

THE CASE OF SANTIAGO DE CHILE
Santiago de Chile shares common patterns of urban growth with most of Latin American cities which have been largely labelled as expressions of urban sprawl, traditionally defined   by a fragmented morphology driven by outer developments and a non-continuous growth (Inostroza, Baur and Csaplovics, 2013). For the case of Santiago, outer developments have been promoted by urban policies mainly placed in the Ministry of Housing and Urbanization (MINVU) and real estate initiatives which have selected peri-urban areas for new housing projects and infrastructure. This process has been triggered by several policies and regulations being the most important the 'urban limit' – that has been seen as a counterpoint in attempts for restraining urban expansion due to arbitrary divisions of urban/rural lands, the creation of 'half-hectare' developments – that promoted the massive subdivision of rural-fringe areas with detached houses and half-hectare plots under the law N° 3.516/1980, the peri-rural location of large-scale social housing developments – that created outer socially segregated areas with high concentration of poverty outside the city and in outer rural villages and towns, and the creation of 'Conditioned Urban Development Zones' (ZODUC) – that defined outer areas for large scale residential developments mainly oriented to middle and upper class families, and aimed to assume impact fees for traffic congestion, environmental pollution and social segregation (Tapia, 2011; Ducci, 1997; Ducci, 2014; Hidalgo, 2007; López, 1981; Peterman, 2006). All of the aforementioned have driven a morphologically fragmented peri-urbanisation described by built-up and non-built-up spaces as interstices between developments. In this vein, the spectrum of interstitial spaces of Santiago's sprawl embraces agricultural zones, brownfields, industrial facilities, landfills, and geographical restrictions, pieces of countryside, conurbation zones, military facilities and open private spaces. These areas are diverse in their functions, scales, geographical distribution, surroundings and physical restrictions (Figure 1).

Planners, politicians, social institutions, residents and scholars have understood these areas from different perspectives considering their diverse origins, functional and spatial characteristics. In terms of origins, some these spaces emerged supported by specific laws related to agricultural functions, other as infrastructural, industrial, military, research and educational services. Functionally speaking, these areas are not easy to be recovered due to the presence of heavy facilities or ongoing activities and as a consequence, implementation of regeneration policies or a lack of densification rest on land-prices, differing interests the characteristics of surroundings which restrain the integration of interstitial spaces. In terms of potentials, these areas are seen as properly for hosting new housing developments, public spaces, ecosystem services and public facilities due to their current good locations, connectivity and land-capacity. Some of these interstitial spaces have been part of infilling and regeneration policies but their diversity, the lack of references, differing political positions and technical instruments have implied a constraint in their integration and the accomplishing of lar-scale initiatives. So, these spaces still remain undeveloped – somehow inert or derelict – illustrating not only their importance and impacts but also their social, economic, environmental and political implications in a planning system traditionally set up for promoting expansions.
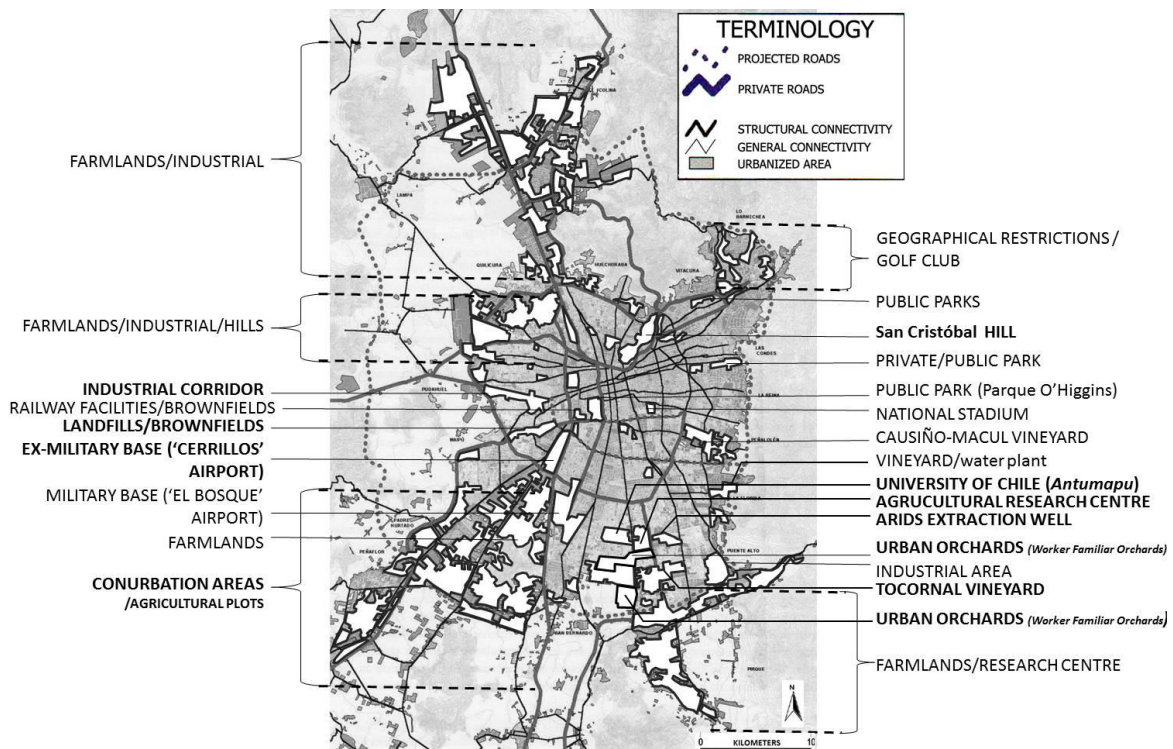
Figure 1. Santiago's map and the diverse interstitial spaces in the context of sprawl (Author's map based on Echeñique, 2006)

Based on the Santiago's sprawl case, interstitial spaces appear as evidence of less controlled processes in planning even when some of those spaces were defined in regional plans before the city's arrival. Finally and as well as many of the built-up areas, interstitial spaces arises as part of a logic of 'muddling through' (Phelps, 2012) and rely on specific issues of socio-political constraints – properly placed as part of a neoliberalized nation-state – that finally shape the production and complexity of the current (post)suburban city.

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HUMAN CAPITAL, CREATIVITY AND LOCAL DEVELOPMENT: A STUDY OF "NEW" AGROFOOD VENTURES IN CRISIS-HIT GREECE

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Introduction
In the midst of economic recession Greece is experiencing the mushrooming of a diverse set of specialized small scale private initiatives in agro-food sector. It is widely believed that these ventures can act as an antidote to the mounting socio-economic problems associated with the corporate-led food production and consumption, a valuable source for new employment opportunities, income and regional development.

Nevertheless we have a very vague idea about their actual characteristics and potential. The paper aims to shed some light to these issues by a) documenting the extent and the spatial pattern of these new ventures and b) assessing the actual impact of human capital in their success. The core question revolves around the impact of knowledge and creativity of new entrepreneurs to business success. In addition, a set of preliminary reactions are directed to complementary issues such as: the identification of main sources of entrepreneurship, the labour mobility, the degree of embeddedness of the new firms to the surrounding areas and their impact to regional development. The paper draws from research that was funded by the Greek Ministry of Education (Thalis MIS 380421).

The extent and the spatial pattern of the new ventures
A systematic search on various secondary data sources beginning from 1/1/2010 revealed 150 dynamic new small firms operating in food processing and retailing. They follow a clear spatial pattern. There is a profound concentration in adjacent areas to Athens and Thessaloniki metropolitan regions. Also, they have a strong presence in areas that combine tourist attraction with significant agro-food specialization (mainly in Crete and several other islands, as well as, in southern Peloponnese).

This is an interesting finding since recent empirical investigations show a relevant move, closer to key markets of Athens and Thessaloniki metropolitan conurbations, for major agro-food processors too, even of primary manufacturing. Hence the traditional over presentation of agro-food processors to certain rural areas of the country seems to be weakening in favour of major urban regions. As a result the acute regional disparities of the country are expected to be widening.

The actual impact of human capital to business success
The answer to the second group of questions draws on the material of 30 face-to-face semi-structured in-depth interviews with entrepreneurs of selected small-scale dynamic food firms (in the period October 2014 and March 2015). They were the owners of newly established agro-food processing and retailing firms located in continental areas within the two hours time-zone from the Athens metropolitan area.

The analysis of human capital is not restricted to the study of qualifications and skills of the entrepreneurs. Using the institutional lens, equal emphasis is given to less obvious areas such as their ability to be creative, to cooperate and set in the local context.

The identification of main sources of entrepreneurship
Agro-food sector is characterised by low barriers to entry and moderate market shrinkage, compare to other sectors of the economy. Hence there is a notable interest for small business formation in the midst of the crisis. This is extremely important in an economy characterised by disinvestment and huge unemployment rate (more than26%). In fact, apart from the traditional sources of entrepreneurship we can identify the following three additional sources triggered by the crisis. First, offspring who had initially chosen a different career path were forced (due to unemployment or instability caused by the crisis) to be involved in the family business later in life. Second, entrepreneurs who were forced to close their business in declining sectors (e.g. garments, construction) identified opportunities and started business to agro-food sector. Third, recently unemployed in several sectors of the economy (advertising, marketing, media, architects, teachers,….), started a small agro-food business.

High educational qualifications and skills
The majority of the entrepreneurs that took part in fieldwork survey have high educational qualifications. They are holders of University degrees, often of postgraduate diplomas as well. Also, they are fluent in English and computer skills. This is a radical change compare to the very low record of the typical owner of small firm a few decades ago (Labrianidis et al., 2004). However we found that a substantial number of them have a working experience only as employees hence they lack experience in basic entrepreneurial skills such as, decision making, management, business planning, et al.

The loose embeddedness of the new firms to the surrounding areas
A big share of the entrepreneurs was not linked to the wider area of the processing firm. In fact, a not insignificant number of them were Athenians. What is more interesting is the fact that they did not move their permanent residence from Athens and they use to operate their business from their Athens offices.

These firms are considered, by definition, typical Short Agro-food Supply Chains, i.e. initiatives that rely on local raw materials and processing practices for the provision of food (Marsden et al. 2000). But this was not always the case. In fact there was an obvious retreat of the local provenance of food in favour of the national origin. Indeed a closer look at their actual supply chains reveals that the use of imported raw materials is kept at low levels. The current crisis has enhanced the market patriotism of a big share of consumers. Hence there is an obvious turn to Greek products at the expense of the famous brands of big TNCs. A big part of the firms that took part in the fieldwork survey were making use of raw materials found in distant areas of the country. In our relevant questions entrepreneurs declared that the market asks for Greek and not local raw materials.

In several aspects firms were making use of traditional production practices. However in several instances the production process was an imitation of production practices applied in several European countries, mainly Italy, France and the Netherlands.

Finally, the inability of firms to integrate in the local economy and society was obvious in several aspects. Despite of their small size they were unwilling to start cooperation and synergies with other firms even in the simplest business areas, such as common transport of goods to the same market. Also entrepreneurs were distant from the local community and expressed a lot of complaints for the indifference of the local authorities to be supportive in economic activity in any way.

Incidence of creativity
The first results of the survey shows that the main sources of dynamism, in a hostile business environment due to the intensity of the crisis, are to be found in carefully selected and creative low cost initiatives taken by the entrepreneurs mainly in the fields of product differentiation, products promotion and market access.

Firms were producing a wide range of products. Some of them were novel for the domestic market (craft beers, edible snails), others are rejuvenated long forgotten traditional local products (carob rusks, cheese specialties) or changes in composition of well known products. A big share of firms was applying sophisticated packaging and products promotion techniques.
The Achilles' heals of the majority of the firms, given the severe recession and increasing market concentration by major super market chains, is the access to market. New entrepreneurs were very active in establishing new market channels of direct sales and market niches.

Discussion

From edible snails cultivation and standardization to premium olive oils and novel types of small-scale grocery retail outlets, a new generation of Greeks are turning to innovative practices in agro-food aspiring to a way out of unemployment and poverty. These practices are mostly run by highly qualified relatively young men and women who work long hours and apply their skills and creativity in order to survive in a hostile business environment led by long-standing recession, increasing market concentration, as well as, instability and limited access to the banking system.

Under certain conditions, these firms are far from residuals of the past and show promising prospects for a more sustainable and equitable future. They seem to be capable of creating economic value by applying creative solutions. They contribute to the upgrade the image of Greek food and gastronomy. They offer a room for responsible entrepreneurship and provide employment and income to highly qualified men and women.

However the research has identified several problems as well. The fieldwork survey revealed weak ties with of the firms with the local economies and societies. Despite their small size they were rather unable to form co-operations with other firms. The new entrepreneurs were highly qualified however they lacked basic business skills.

Summing up, we can argue that these firms are new, without inverted commas, in crucial aspects. However they share the problems of the old typical traditional small firms operating in agro-food sectors in certain less visible but important areas. Hence their long-term viability and success is questioned unless they will be supported by appropriate state policies.

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BUREAUCRATIC RATIONALE AND USE OF AN ACADEMIC CONCEPT IN POLICY MAKING: THE RISE AND FALL OF THE REGIONAL INNOVATION SYSTEM IN SOUTH KOREA

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ABSTRACT:

This paper contributes to the understanding of the interface between academic research and regional policy. According to the literature on policy rationale, policy makers select elements from existing academic research that fit their policy rationale. We further expand on this idea and argue that bureaucrats not only passively choose academic concepts, but also actively reconstruct them. To show this, we theoretically distinguish between three different levels of policy rationale—meta, intermediate, and specific—and analyze the way the Regional Innovation System was used in regional policies under South Korea's Roh Administration (2003–2008).

KEY WORDS: Policy relevance of social science, knowledge utilization, regional innovation system, South Korea, policy rationale

JEL Classification: R11, O25, O38

1. Introduction

The last two decades saw an unusually frequent use of economic geographical concepts in the regional policies of Europe and other parts of the world (Rehfeld and Terstriep, 2012). After these optimistic and zealous efforts, however, there is now emerging a more reflective body of literature, which we will call "policy rationale literature." According to this body of literature, academic theories and concepts cannot dictate the way policies are created; rather, 'policy rationale' a way of thinking that shapes policy makers' ideas and, thus, the creation

of actual policy measures often exist before any academic input can be made. Elements of academic theories are adopted only when they are compatible with the policy makers' preferences (Majone, 1989; Radaelli, 1998).

This paper extends this idea by proposing three levels of policy rationale: meta, intermediate, and specific. We pay particular attention to academic rationale and bureaucratic rationale, the two policy rationales that operate at the intermediate level. In so doing, we demonstrate that policy makers not only selectively adopt academic concepts, but also actively reinterpret and sometimes even distort them. An empirical analysis was conducted on the way the regional innovation system (RIS) concept used in South Korean central government's regional policy[38] under the Roh Administration (2003-2008).

The main finding of this research is that Ministry of Industry and Resource used an academic concept to legitimize the continuation of its old policies. An institutionalist approach to policy inertia suggests that resources invested in forming institutions that support a certain policy makes change costly (Pierson, 2000). Our findings suggest that institutions are not forced to continue their policies because of sunken costs, but rather actively put forth effort to do so. The policies of MIR were those proven over time to serve, or at least not hurt, the agency's organizational interests. Therefore, the agency did not have strong incentive to take risks in developing new policies; rather, it chose to repackage existing policies with new concepts that better fit the changed meta rationale. As part of that repackaging effort, an institution can actively find and re-interpret academic concepts.

This understanding of the policy process leads to a discussion about the academic value of a concept. Our findings suggests that when an academic concept occupies the center of policy discourse, the logical coherence or some other academic value did initially impress Korean policy researchers. However, this value led RIS to become only one of many concepts behind the MIR's policies. RIS was elevated to be the central regional policy concept only after MIR realized that RIS could serve its interests under the new administration. This does not necessarily mean that the MIR attempted to borrow the hallowed title of the concept. What the MIR did instead was emphasize certain elements of the concept. This was possible because RIS itself was an academic concept aimed at explaining diverse cases (Braczyk, Cooke, and Heidenreich, 1998). Despite Cooke's (2009) claim that the concept is based in actual policy experience, it did not offer a fixed set of policy measures in its early stages (Uyarra and Flanagan, 2010). The concept later acquired a strong normative dimension through co-evolution with the EU's spatial policies (Asheim et al., 2011; De Bruijn and Lagendijk, 2005) but this happened after the concept was picked up by Korea. The absence of concrete policy measures allowed MIR greater flexibility in the concept's interpretation so it could selectively adopt elements of RIS. If RIS was a fixed set of policy measures, MIR may have found it difficult to mold the concept to serve its interests, and may have chosen another concept. In this sense, the "fuzziness" of concepts that Markusen (2003; 2013) criticized was actually helpful in RIS being chosen by South Korean policymakers. This finding resonates with Sotarauta (2012), who argued that fuzzy concepts are a useful starting point for mutual learning between actors with different rationales (see also Laranja et al., 2008).

We believe that our findings are not confined to the Korean policy context; for example, the recent attention to "the creative city." This concept, which most people credit to Richard Florida (2002), may seem influential in the wave of culture-led regeneration from the UK to Italy to China, despite the concept's lack of academic rigor (Lang, 2005). Projects that are often cited as successful cases of culture-led regeneration, however, such as the Lowry in Manchester, the Tate Modern in London, and Guggenheim in Bilbao, existed long before Florida's concept. His concept, therefore, marks the innovation of the legitimization discourse, as opposed to the innovation of actual policy. Furthermore, the planning discourse on creative regeneration also diverges from Florida's theory of creative class. While the former often prescribes physical development in housing and retail, the latter emphasizes the concentration of a creative workforce (Evans, 2005). While reasons for the creative city's popularity, who promoted it, and for what reasons, is outside the scope of this current study, it seems reasonable to consider the fate of this concept to be rather similar to that of RIS in South Korea. Our interpretation of the findings in not intended to sound pessimistic toward academic research's contribution to public policy, and to regional innovation policy in particular. As we cited earlier, some of our interviewees from

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[38] Following Friedman and Alonso (1975), we define regional policy as a policy that deals with issues arising between regions (e.g., regional disparity). In their definition, policies within a region are called "regional planning," although the two terms are obviously closely related.

policy practice revealed positive educational effects, claiming that the concept of RIS did influence the way that policy practitioners think about the source of regional economic growth.

The bureaucratic rationale cannot be exposed individually, so it has to be packaged within the academic rationale and the meta rationale. In the process, the bureaucratic rationale spreads part of the academic message to a wider audience. This is, however, not the "enlightenment effect" that Weiss (1979) discussed. She argued that the accumulation of high-quality research can eventually help policy practitioners better understand the problem, and even influence their policy decisions in the long run. Therefore, though RIS had an enlightenment effect, it was not because the concept was based on high-quality research. Eventually, though, the messages that local policy communities received were that innovations can be the source of local economic development, and that networks among innovators are crucial, which are the central messages of the concept.

Therefore, we tend to agree with Miettinen (2002), who argued that the system of innovation concepts was visionary rather than rooted in empirical evidence, and that vision, once accepted by local actors, will have enduring effects. If that is the case, researchers should accept that, as Feser and Luger (2003) state, research is "a starting point of discussions about the economic development process, our values, and real priorities (p. 23)," and be willing to focus on long-term changes.

EVEN SMALL COUNTRIES NEED SYSTEMIC REGIONAL GOVERNANCE

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Introduction

The main aim of this paper is to analyse the complexity of establishing a functioning regional governance system in a small country, such as the Republic of Croatia with its 4.3 million inhabitants, an EU member state since July 2013. The EU integration process triggered an evolutionary institutional adaptation process through changing public management structures, approaches and cultures. Methodologically, this research combines the findings of a study on the regional development strategic planning system commissioned by the Croatian Ministry for Regional Development and EU Funds (Sumpor, et al. 2012), and links practical and theoretical insights established within the field of regional planning, policy and governance (Charron et al. 2014, McCann and Varga 2015). Institutional capacities and development play an important role in this context (Rodriguez-Pose, 2013).

Every time a new planning process starts, it is worth questioning again what makes a good planning system within which a region, regardless of administrative-territorial scope, can create an „implementable" development plan that will serve its purpose, even in times of crisis. During 2015 regional policy planning processes on national and regional level are initiated in Croatia. The national regional development strategy encompasses the two NUTS 2 regions, Continental Croatia and Adriatic Croatia, formed in 2013. The 20 counties and the capital city of Zagreb are self-government units and represent the Croatian regions (NUTS 3), see Map 1. Discussions on the statistical division of Croatia were long and heavy, and ended in an initial division into three regions. There were even opinions that Croatia might even avoid any regional division, since being so small. However, a regional division of its territory seems quite necessary due to its geographic, economic and socio-cultural specificities. The intention of regional policy management in Croatia is to foster a simultaneous top-down and bottom-up development process, to enable institutional structures to manage the development in the best possible way. However, the counties' patience has been severely tested as their strategic documents expired in 2013 and according to the Law on regional development their planning cycles are linked to the national level strategic planning process. The Regional development ministry announced updates on planning requirements based on the findings and recommendations from the 2012 Study that derived from the analysis of all county development strategies, interviews and workshops, but did not publish the guidance document until October 2015. Even before the ministry started with the national regional development strategy, most of the counties advanced already with their strategy preparation processes and will have to comply with new requirements.

A Systemic Approach to Regional Governance in Croatia

The Croatian regional governance system is evolving since the early 2000s by clearly indicating that the counties represent Croatian regions with self-government status. They have a coordinative role in a number of public policies on regional and local level including social, economic and spatial development. Strategic planning processes were introduced on all levels of governance including central government institutions, regional and local self-governments. The early attempts of introducing systemic regional development planning were primarily focussed on creating institutional structures and administrative capacities for managing European structural funds. A big step forward has been the introduction of partnership councils and the intention to create a platform for vertical and horizontal inter-institutional coordination, somewhere with more and somewhere less success. As part of the debate on public sector reform needs and budgetary cuts, there have been broad political discussions about what would be the optimal administrative territorial division of the state to serve in the best way national regional and local development policy management needs. Due to global pressures caused by economic, environmental and social crises, national, regional and local governments need to rethink the role and scope of regional development plans in a national context.

Map 1. Republic of Croatia NUTS II Regions, July 2013.
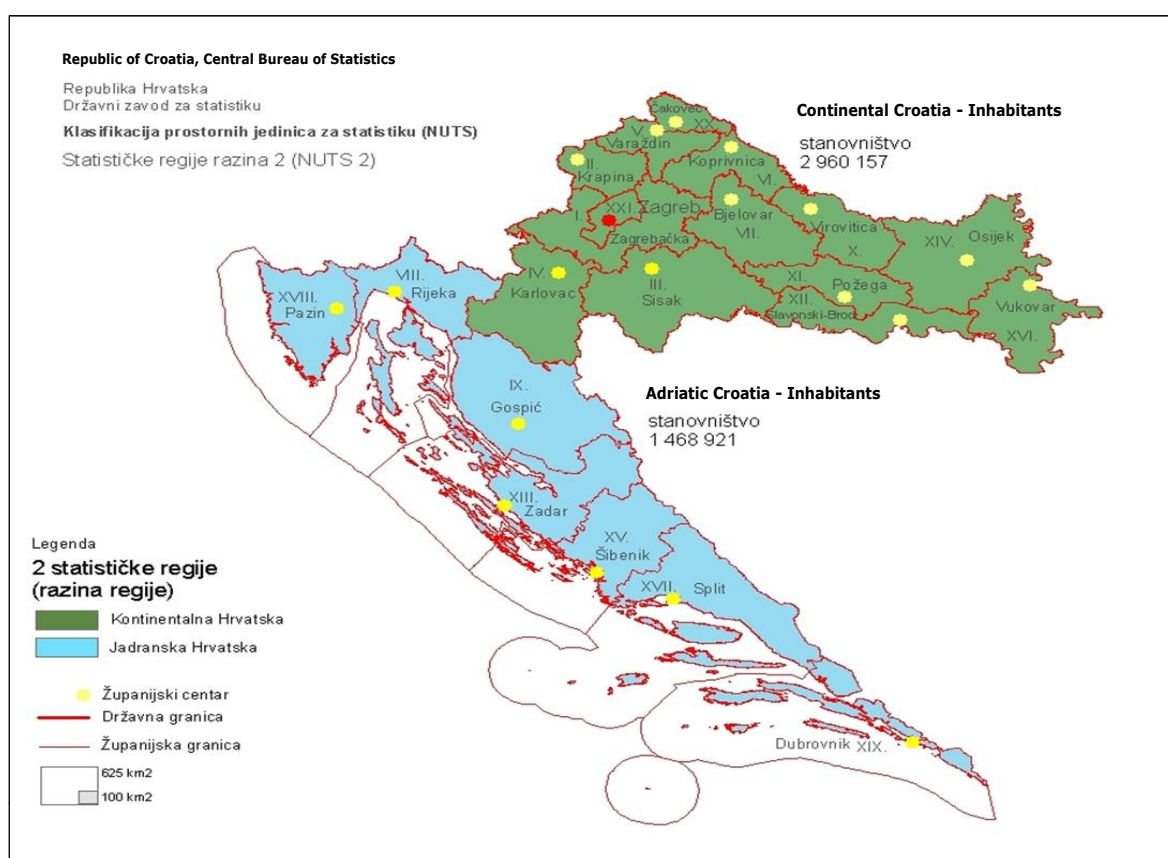
Strategic development planning practices means a systematic approach to development management. In Croatia regional development strategic planning encompasses formally a strategic document with a situational analysis including SWOT tables, vision, objectives, priorities, measures developed on the basis of participatory approaches, are based on sustainability, regularly deal with social inclusion, innovation, youth unemployment etc. What was missing in the past programming round was a sense of reality and ability to link the strategic plan with the regular work planning practice in the respective public administrations. Though, the strategic documents are officially adopted by the respective public bodies (assembly), the political executives (minister, county prefects and mayors) do not necessarily feel personally responsible to comply with the objectives, priorities and measures of the document in day to day work. It often looks like politicians have their own agenda. For example, political party programmes are not necessarily harmonized with official strategic development documents. Clearly, ownership is lacking on this political level, while public administration officials and regional development agency staff run this planning process and try to organise their work in accordance with this new planning framework. It seems like working in two parallel worlds, which clash on everyday basis.

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However, the evaluation of concrete impacts of such new policy approaches are still in its infancy as monitoring and evaluation systems are just being established. These two important steps in the public policy management system are rather new to Croatian public administrations and are strongly related to the EU membership process. The results of the 2012 Study indicate that systemic guidance from above is needed to foster better organisation of existing public management structures from lower governance levels, enable vertical and horizontal policy coordination, and promote modern understandings of political leadership (Sotarauta et al, 2012).

Why Systemic Regional Governance?

A strategy, being systematic, cannot be implemented without a functioning institutional system. Therefore, the meaning of systemic in the regional development policy context means established and functioning horizontal and vertical coordination mechanisms (Sumpor, 2007). To have them in place, we need to think of institutional environment (incl. informal institutions) and institutional arrangements (of formal institutions) simultaneously (A. Rodriguez-Pose, 2013.). In the Croatian Regional Development Strategy 2011-2013, a strong emphasis was on the establishment of an institutional structure that would be able to manage development in the regions as well as respective projects funded through the EU structural funds. However, there was no mention of the institutional environment. The key issues where clear dedication of responsibilities and availability of funding for implementing strategic development projects. However, not much happened in this respect as there was no action plan, but also, the institutional environment is heavily burdened by the neglect of crucial administrative and territorial reforms that have to be initiated on the national level.

Conclusions

Croatia's regional policy in 2015 has a new institutional environment heavily influenced by EU regional policy principles and mechanisms, compared to the EU pre-accession period, when the former regional development strategy was elaborated (2003-2013). The EU integration process has significantly influenced strategic planning and management approaches of a particular group of institutions, namely those related to regional development. The institutional setup for implementing regional policy has been evolving and the newly established regional coordinators represent an important vehicle for the new generation of strategic documents and their day to day implementation. Through time, political leadership starts to sense the importance of strategic planning and management. On national level, as part of the new EU membership role, horizontal i.e. inter-ministerial coordination is becoming the norm for daily work across public policy domains. The next step would be to introduce systemic policy evaluation practices to see how sustainable and effective regional policy is being implemented.

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Introduction

Since the gradual introduction of Local Enterprise Partnerships (LEPs) from 2010, each of these partnerships has evolved in different ways as they seek to provide strategic leadership to support economic growth. However, during 2014 all LEPs were invited by central government to prepare Strategic Economic Plans (SEPs). Encompassing longer-term strategic objectives and short-term implementation plans, these provided the platform for negotiating Growth Deals. Whereas SEPs are non-statutory documents and their relationship to the planning system is opaque, they merit analysis due to their implications for the planning and development sectors. Indeed, the National Planning Policy Framework places a duty on local planning authorities to take account of the views of LEPs, thus the content of SEPs is a material planning consideration. Beyond these points, SEPs are worthy of attention because central government, led by the Treasury, considers them to be a key tool in the leadership role performed by LEPs. From LEPs' perspective, they now have their SEPs in place, setting a vision for their areas and often spatial priorities, which they are now seeking to implement during the SEP period (to 2024).

Based on an examination of the Strategic Economic Plans (SEPs) prepared by all the LEPs, accompanied by a national survey and programme of semi-structured interviews, this paper reports on some of the key findings from our final report for the RTPI,[39] which provides the first comprehensive analysis of the planning roles of LEPs.

Local Enterprise Partnerships and Strategic Economic Plans

The soft foundations of LEPs limited their statutory role in the planning system, and during their formative years *most* partnerships opted not to pursue an (optional) planning role alongside statutory planning bodies, with interviewees citing a lack of resources necessitating a different prioritisation of core roles and activities. However, Lord Heseltine's Growth Review[10] was described by interviewees as a 'turning point' – providing LEPs with renewed standing, repositioning them as pivotal local growth institutions.

SEPs are not planning documents in the sense of being a formal part of the plan-led system. Rather, they are intended to be 'multi-year plans for local growth', which alongside a vision statement and priorities should include a 'high-level investment plan'. Just as there is no single model for LEPs, SEPs also display some diverse forms. Their mean length is 160 pages, with a range from 43 to 227 pages. SEPs are more in the tradition of 'ephemeral' economic strategies than 'cumbersome' statutory plans.

Analysing each SEP as a whole, we differentiated between those which are more akin to business plans or bidding documents (15) and those that are more akin to plans for the area (23). The key distinction is that the former provide a LEP-wide statement of immediate priorities (where their primary audience is central government), whereas the latter are indeed a plan for the area (where their primary audience is much broader and could include for example inward investors as well as local planners) and *could* be viewed as the first iteration of the journey of producing strategic spatial economic plans with statutory force. Some SEPs support the delivery of more holistic strategies and are embedded in broader strategic processes and institutional frameworks, whereas others appear to be more independent, even isolated, from other processes.

Putting 'place' into economic plans

Most SEPs have at least attempted to reflect local economic, political, cultural and physical geographies, although very few are aligned with the principles of more integrated place-based development planning. Most plans are ambitious and articulate bold visions for growth, although the qualitative dimensions of growth beyond

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[39]

http://www.rtpi.org.uk/media/1400949/rtpi_research_report_planning_for_growth_final_report_9_july_2015.pdf

achieving uplifts in Gross Value Added are rarely considered. Thus, they are 'boosterist' in nature. Only time will tell whether these are realistic.Some of our interviewees who had performed lead roles in the development of particular SEPs remarked that their growth targets were speculatively ambitious. Of the 38 SEPs, the majority take a selective approach to organising and conveying priorities, combining spatial, sectoral and/or thematic approaches.There are some fine examples of plans that attempt to provide overarching spatial frameworks for a myriad of projects, processes and investment decisions. Nevertheless, many others are largely uninspiring. Many plans identify 'growth locations', 'strategic sites', 'growth corridors' and similar strategic areas. Political 'jam spreading' is a longstanding feature of sub-national politics and economic development and remains a central feature of the SEP process. For example, some SEPs present large numbers of spatial 'priorities', to a greater or lesser extent, spread between the LEPs' constituent local authority areas. There has been criticism of the related European Structural and Investment Fund Strategies for coming across as generic and lacking local distinctiveness.. Some interviews with officers revealed that some LEPs had not accumulated a rigorous spatial evidence-base, which would have been needed to hone spatial priorities. Consequently, numerous SEPs outline broad locations for growth or priority areas, such as major cities, towns and rural areas. In these instances, it does beg the question: what location is not a priority for growth?

To some extent, rather than presenting an overarching spatial strategy and place-based development strategy, SEPs tend to focus on those policy areas where the LEP has received, or believes it is likely to receive, enhanced powers, responsibilities and resources. The clearest example is the presence of significant financial contributions from the Department for Transport to the Local Growth Fund, which steered LEPs to prioritise transport projects. Similarly, from a partnership perspective, the Skills Funding Agency (SFA) has instructions to work with LEPs, which encouraged LEPs to concentrate on SFA funded activities in further education rather than the role of schools or universities per se.

Beyond boosterism

National planning policy sets out that economic, social and environmental needs should be simultaneously considered and reconciled in the formulation of Local Plans. SEPs on the other hand have often failed to address issues of social inclusion and exclusion, and many of them engage with this matter only insofar as it relates to European Structural and Investment Funds. Support for those communities, families and individuals contending with multiple aspects of deprivation also appears to have been significantly neglected.. For example, few SEPs consider how enhanced private sector productivity can positively impact the lives of deprived communities, while access to new jobs is given scant attention, although some SEPs contend that transport infrastructure investment is a social inclusion policy that will increase access to economic opportunity.

Environmental considerations are more prominent across the plans than many other non-economic factors, although they have been dealt with in many different ways.
Alarmingly, however, environmental considerations were omitted almost entirely across a small minority of SEPs. Whilst many plans pay lip service to broader sustainable development principles a significant number of SEPs fail fully to consider, examine and/or model the social and environmental implications of pursuing growth-focussed strategies. 'Growth at what cost and for what purpose?' is a question that some LEPs have not asked themselves.

Conclusion

With the abandoning of regional planning during the last parliament, more recently momentum is gathering, albeit to varying degrees, behind new modes of combined development planning to help fill a strategic void. The clearest quickening yet lies in the Association of Greater Manchester Authorities' 'Devolution Deal', which will result in the transfer of new powers to the Greater Manchester Combined Authority (GMCA), including a statutory strategic plan for the metropolitan area. This may be extended to three more Combined Authorities in the November Compr4ehensice Spending Review. Alongside this, there had been a steady rise in groupings of local planning authorities (as well as other organisations) developing and adopting voluntary forms of strategic spatial frameworks.The first iteration of SEPs could indicate a tentative renaissance of England-wide strategic economic planning, although our detailed comparative content analysis of all 38 SEPs reveals that less than two thirds could be considered a plan for the area., LEPs are influencing spatial planning decisions whether they perceive this to be part of their core remit of providing strategic economic leadership or not. As they have matured and taken on more responsibilities, many have emerged as key economic development bodies, which by implication ensure that they are significant *planning actors*. This observation is significant, particularly given

the perception of some LEPs, which consider that they 'leave planning to the planners'. This indicates that some LEPs have a narrow understanding of the planning system.

Whether SEPs can be described as locally specific place-based tools to guide immediate and longer term spatial transformation and economic growth is a question that warrants closer attention. The 15 which we deem to be akin to business plans or bidding documents are likely to serve a more internal, organisational role. Beyond the role of bidding documents to access Growth Deal funding, some interviewees revealed that their particular SEPs were of limited value. With many LEPs lacking capacity generally and, specifically, expertise in spatial strategy and analysis, combined with a prohibitive timescale for preparing these plans, SEPs can be viewed as an early iteration of economic strategy-making across England's evolving sub-national terrain.

UNDERSTANDING HUMAN CAPITAL MOBILITY: LEISURE AMENITIES AS CONTEXTS FOR SOCIO-SPATIAL ATTACHMENT

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1. Introduction

This paper addresses the specific role of lifestyle or leisure amenities in giving certain urban spaces a special appeal as a residential space for 'skilled professionals'. Numerous scholars have already argued the importance of human capital for a region's position in a highly competitive innovation driven economy (e.g. Glaeser, Kolko and Saiz, 2001; Florida, 2002; Martin and Sunley, 2006; Storper, 2010; Glaeser, 2011). Hence, the inter-urban competition for talent is fierce, leading to a nervous search by urban policymakers for tools to attract human capital to their locale. While classic location theory suggests that the availability of jobs and adequate housing is the main reason why highly skilled residents cluster in certain places, increasingly attention is drawn to the role of lifestyle amenities as an additional factor of importance. A large variety of studies has been done to identify which consumption related amenities are more strongly related to (skilled) population growth (c.f. Glaeser et al., 2001; Clark et al., 2002; Florida, 2002; Markusen and Schrock, 2006; Musterd and Murie, 2010). However, the underlying micro-dynamics of the relation between human capital, amenities and place attractiveness remains diffuse: what exactly is it about places and personal preferences that makes certain people feel attracted to certain places?

This is where this paper comes in. Its objective is to explore in more detail the role of lifestyle or leisure amenities in raising the appeal of certain urban regions as a residential space for specific professional groups. The central question focussed upon in this paper is: '*How, and to what extent, may leisure amenities enhance the attractiveness of urban regions as residential spaces for creative knowledge professionals, and which factors might contribute in more detail to the attraction power of these amenities*'.

2. Amenities as sources for socio-spatial attachment

The concept of 'amenity' has a dual meaning, and signifies not only those facilities or features that make a place attractive, but also the extent to which the overall locality is perceived as attractive. It refers to both its function as *producer* of a certain appeal, and as *outcome* of certain features. *Leisure* amenities here points towards their role as settings of social practices which are related to lifestyle preferences. These practices go beyond mere consumption of experiences or lifestyle attributes, but also entail practices that are meaningful for the individual and/or community, for instance with regard to relaxation and contemplation, identity formation and/or social bonding; practices typically sought for in spheres of leisure.

Amenities structure social (leisure) practices, and are simultaneously shaped by them. As settings they organise co-presence around a shared activity, e.g. to enjoy a cultural performance, play a game of sports, share stories, food, drinks and/or dance. Collins (2004) shows how through shared social practices, affective relationships can be formed, maintained and strengthened. Sharing experiences with others resemble rituals, so he argues, in which emotion energy is generated and meanings are formed. These meanings can relate to strengthening group solidarity, but simultaneously transfer into objects which become symbolic for this group solidarity. Place can be such an object. Leisure amenities may therefore not only structure interaction rituals by providing the timespace settings for shared experiences, but they may also be shaped by these experiences. These amenities bring together practitioners with similar tastes and lifestyle preferences, and as such, are important sources for

social relationships (c.f. Arai and Pedlar, 2003; Shove, Pantzar and Watson, 2012). The social bonds that are formed and maintained in these leisure spaces, are embedded in them and become a formative part of them. Leisure amenities are thus more than mere spatial settings in which leisure time is consumed, but equally they are a source of affective relations with places, objects and people.

The role of shared experiences in building affective relationships with place and people stretches beyond the confines of the specific amenity itself. Despite the possibilities offered by mobile communication technologies, social bonds are still reliant on occasional corporeal encounters (Larsen, Axhausen and Urry, 2006; Bunnell et al., 2012) and thereby rooted in specific regional settings. Attachment to place, as Low and Altman (1992, p. 7) argue, is essentially social: '*it is to those social relationships, not just place qua place, to which people are attached*'. To properly understand the role of leisure amenities in mobilising social networks and hence labour mobility, we need to be aware of the dual 'workings' or these spaces: amenities may trigger interaction rituals, and thus may be imbued with meaning as the result of these, and thereby work as platforms for creating socio-spatial forms of attachments. Especially in dense urban networks such as in The Netherlands, where multiple labour markets are often within close proximity of a certain locale, these place-based social networks and the settings in which these are maintained, may explain why certain people choose to commute for work and not for leisure.

We therefore argue for a more extensive understanding of the dynamics of social context in understanding mobility patterns. Work-related factors still matter, but the socio-cultural dimension might help us to develop a more extensive understanding for why certain places are more attractive than others.

3. Towards a research agenda

The above shows that the mere presence of a certain set of amenities as such does not define which place wins 'the war on talent'. Amenities do seem to play a role giving certain places an appeal to certain people through their function as providing settings for socio-spatial attachment. Leisure spaces are not just contexts where human beings, as 'isolated' individuals, spent their (free) time, but they are contexts of meaningful social interactions and experiences: of rituals shared with others, with similar interests. If these amenities have a power in attracting or retaining people to a place, it is argued here that it is the social significance of the amenity, and the socio-spatial attachment that occurs as a result, through which this power 'works'.

Why then are certain amenities better in attracting of retaining people to places than others? This exploration suggests that it is not so much the *type* of activity that matters, but the way in which it can provide the right context for these meaningful social experiences. The preference for one local bar '*where everybody knows your name'* over another tells us more about the attractiveness of places than the mere presence of a type of amenity vis-à-vis a more globalizing crowd of 'isolated' individuals.

Hence, to understand why people live where they live, requires an understanding of how the spatial, the social and the cultural come together in the formation of practices of attachment. How do forms of socio-spatial attachments develop, and how does this relate to the attractiveness of venues, clusters and/or regions? As a consequence, to understand the dynamics involved, a type of research is required paying attention to how these socio-spatial practices and the social configurations involved are (re)produced, and on the basis of what kind of ingredients. Next, the question is how, and to what extent, this affects both everyday and residential mobility patterns.

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EVENTS AND CATCHING UP: AUTOMOTIVE EVENTS IN SHANGHAI

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1. Introduction

This paper addresses the specific role of lifestyle or leisure amenities in giving certain urban spaces a special appeal as a residential space for 'skilled professionals'. Numerous scholars have already argued the importance of human capital for a region's position in a highly competitive innovation driven economy (e.g. Glaeser, Kolko and Saiz, 2001; Florida, 2002; Martin and Sunley, 2006; Storper, 2010; Glaeser, 2011). Hence, the inter-urban competition for talent is fierce, leading to a nervous search by urban policymakers for tools to attract human capital to their locale. While classic location theory suggests that the availability of jobs and adequate housing is the main reason why highly skilled residents cluster in certain places, increasingly attention is drawn to the role of lifestyle amenities as an additional factor of importance. A large variety of studies has been done to identify which consumption related amenities are more strongly related to (skilled) population growth (c.f. Glaeser et al., 2001; Clark et al., 2002; Florida, 2002; Markusen and Schrock, 2006; Musterd and Murie, 2010). However, the underlying micro-dynamics of the relation between human capital, amenities and place attractiveness remains diffuse: what exactly is it about places and personal preferences that makes certain people feel attracted to certain places?

This is where this paper comes in. Its objective is to explore in more detail the role of lifestyle or leisure amenities in raising the appeal of certain urban regions as a residential space for specific professional groups. The central question focussed upon in this paper is: '*How, and to what extent, may leisure amenities enhance the attractiveness of urban regions as residential spaces for creative knowledge professionals, and which factors might contribute in more detail to the attraction power of these amenities*'.

2. Amenities as sources for socio-spatial attachment

The concept of 'amenity' has a dual meaning, and signifies not only those facilities or features that make a place attractive, but also the extent to which the overall locality is perceived as attractive. It refers to both its function as *producer* of a certain appeal, and as *outcome* of certain features. *Leisure* amenities here points towards their role as settings of social practices which are related to lifestyle preferences. These practices go beyond mere consumption of experiences or lifestyle attributes, but also entail practices that are meaningful for the individual and/or community, for instance with regard to relaxation and contemplation, identity formation and/or social bonding; practices typically sought for in spheres of leisure.

Amenities structure social (leisure) practices, and are simultaneously shaped by them. As settings they organise co-presence around a shared activity, e.g. to enjoy a cultural performance, play a game of sports, share stories, food, drinks and/or dance. Collins (2004) shows how through shared social practices, affective relationships can be formed, maintained and strengthened. Sharing experiences with others resemble rituals, so he argues, in

which emotion energy is generated and meanings are formed. These meanings can relate to strengthening group solidarity, but simultaneously transfer into objects which become symbolic for this group solidarity. Place can be such an object. Leisure amenities may therefore not only structure interaction rituals by providing the timespace settings for shared experiences, but they may also be shaped by these experiences. These amenities bring together practitioners with similar tastes and lifestyle preferences, and as such, are important sources for social relationships (c.f. Arai and Pedlar, 2003; Shove, Pantzar and Watson, 2012). The social bonds that are formed and maintained in these leisure spaces, are embedded in them and become a formative part of them. Leisure amenities are thus more than mere spatial settings in which leisure time is consumed, but equally they are a source of affective relations with places, objects and people.

The role of shared experiences in building affective relationships with place and people stretches beyond the confines of the specific amenity itself. Despite the possibilities offered by mobile communication technologies, social bonds are still reliant on occasional corporeal encounters (Larsen, Axhausen and Urry, 2006; Bunnell et al., 2012) and thereby rooted in specific regional settings. Attachment to place, as Low and Altman (1992, p. 7) argue, is essentially social: '*it is to those social relationships, not just place qua place, to which people are attached*'. To properly understand the role of leisure amenities in mobilising social networks and hence labour mobility, we need to be aware of the dual 'workings' or these spaces: amenities may trigger interaction rituals, and thus may be imbued with meaning as the result of these, and thereby work as platforms for creating socio-spatial forms of attachments. Especially in dense urban networks such as in The Netherlands, where multiple labour markets are often within close proximity of a certain locale, these place-based social networks and the settings in which these are maintained, may explain why certain people choose to commute for work and not for leisure.

We therefore argue for a more extensive understanding of the dynamics of social context in understanding mobility patterns. Work-related factors still matter, but the socio-cultural dimension might help us to develop a more extensive understanding for why certain places are more attractive than others.

3. Towards a research agenda

The above shows that the mere presence of a certain set of amenities as such does not define which place wins 'the war on talent'. Amenities do seem to play a role giving certain places an appeal to certain people through their function as providing settings for socio-spatial attachment. Leisure spaces are not just contexts where human beings, as 'isolated' individuals, spent their (free) time, but they are contexts of meaningful social interactions and experiences: of rituals shared with others, with similar interests. If these amenities have a power in attracting or retaining people to a place, it is argued here that it is the social significance of the amenity, and the socio-spatial attachment that occurs as a result, through which this power 'works'.

Why then are certain amenities better in attracting of retaining people to places than others? This exploration suggests that it is not so much the *type* of activity that matters, but the way in which it can provide the right context for these meaningful social experiences. The preference for one local bar '*where everybody knows your name'* over another tells us more about the attractiveness of places than the mere presence of a type of amenity vis-à-vis a more globalizing crowd of 'isolated' individuals.

Hence, to understand why people live where they live, requires an understanding of how the spatial, the social and the cultural come together in the formation of practices of attachment. How do forms of socio-spatial attachments develop, and how does this relate to the attractiveness of venues, clusters and/or regions? As a consequence, to understand the dynamics involved, a type of research is required paying attention to how these socio-spatial practices and the social configurations involved are (re)produced, and on the basis of what kind of ingredients. Next, the question is how, and to what extent, this affects both everyday and residential mobility patterns.

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THE PAST AND FUTURE OF SUBREGIONAL PARTNERSHIPS IN FLANDERS

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Empirical work throughout Europe shows that a large body of public, semi-public and private actors is active in permanent, temporary or provisional arrangements for the economic development of regions (Cabus, 2002; Voets & De Rynck, 2006). These (often complex) arrangements point to an increasingly multilevel and multiscalar approach of governance where different scales of government and governance interact with each other. A stream of literature focuses on the need for 'joint-up governance', 'place-based' approaches and contextual awareness in the delivery of regional strategies (Barca, 2009).

Where initially the regional level adapted national policies and instruments, individual regions in various member states now have strengthened capabilities for tailor-made policies and they have more weight in regional programming and policy coordination (Bachtler et al., 2003 ; Lagendijk, 2011).

The delivery of 'place based' regional policy schemes requires the creation of cooperation initiatives between actors in a region stimulated by a network of 'stakeholders' (European Commission, 2010). There is a growing recognition that different interdependencies between levels of government exist (Charbit, 2011; Hooghe, Marks & Schakel, 2010). National and supranational levels of government work increasingly together with local and regional levels to improve coordination and the implementation of commonly agreed goals and objectives. Moreover, the responsibility for policy design and implementation is allocated among different levels of government. This approach takes account of the perspectives of key regional actors with significant local interests. Next to that, within the regional policy field, the growing proliferation of actors can challenge issues of internal coherence (Bachtler *et al.*, 2001; Tubex, Voets & De Rynck, 2005).

Next to a move from cohesion towards competitiveness considerations and from top-down government to multi-level governance there is a trend towards policy integration. The recent financial crisis of 2008 brought industrial policy back on the agenda in several European regions. The importance of technology and innovation connected research policy to place based innovation approaches (Soete, 2009; McCann *et al.*, 2011). This trend is not only visible in European policies, also regions are working on the stronger alignment of regional, industrial and research policies (Lagendijk, 2011). The emergence and development of cluster approaches strongly intertwined industrial and regional policy. This could be illustrated with the example of the Peaks in the Delta-program in the Netherlands or the Pôles de Compétitivité-approach in France. At this moment regional policy is seen as a mix of policies coming from various (industrial, economic, innovation and infrastructure) domains in the policy mix.

Furthermore, there is an increasing importance at the regional level with regard to diffusion-oriented innovation support policies. Regional innovation policies have gained a prominent position in the field of economic support and intervention (Lagendijk, 2011). Innovation features more and more in regional development policies. Over the years a large body of literature provided policy makers with insights into why some regions grow faster than others. Particularly the regional innovation system (RIS) perspective was very influential in the policy design of the OECD and the European Commission. In the current debate on a new generation of regional development policies the concept of smart specialisation (RIS3) has gained significant political and analytical importance at the regional level (European Commission, 2010; McCann *et al.*, 2011).

Since the 1990s this has led to a proliferation of sector-based regional economic strategies in Europe on various spatial scales (e.g. city-regional, regional, provincial, national, local, cross-border) by a single actor or group of actors often regional governments, diverse governance arrangements or chambers of commerce (Navarro, Valdaliso, Aranguren, & Magro, 2013). These strategies are a (more or less) coordinated series of policy actions focusing on the economic development of a locality with interventions in a broad field of domains (e.g. R&D/innovation subsidies, infrastructure works, research support, human capital, cluster policies). Sector-based regional economic strategies have in common that they are focused on a select group of sectors, technologies, industries, domains or clusters.

Regional strategies focus on specific industries or technologies because of the pre-supposed cumulative effect through (in)direct linkages with other firms and the perception that 'modern, high-tech' industries are necessary for economic growth (Lambooy & Boschma, 2000). The Flemish government for example initiated since the 1980s a series of policy agendas targeting the growth of internationally distinctive clusters (Larosse, 2012). In this paper we tackle the research question:" How do sector-based strategies at various scales impact subregional development (strategies)?" We focus on multi-scalar relations and mechanisms between regional, subregional and local level that can enhance the potential benefits of economic development strategies of regions. The subregional arena (in Flanders) is considered in this paper as an operational interface between administrative policy levels where bottom-up initiatives of local policy actors and top-down initiatives of e.g. European, national, regional or provincial actors meet (Messely, 2014). It is on this level (or arena) where place-based economic development can be organized, operationalized and delivered.

Empirically, we initiate our analysis at the moment when the first Flemish economic strategy started in the 1980s till now (2015). In the first section we discuss three evolutions. First, the evolution of a national industrial policy to an innovation focused regional economic policy. Second, an evolution in the structure and rationale of subregional policy-making in Flanders. And third, we consider regionalization and decentralization of competencies to local levels of government and their role in strategy-building. In the second section, we provide an analysis of survey data on the nature, content and evolution of regional strategies of subregional partnerships in Flanders. In the last section we discuss the coming together of the three interrelated evolutions and conclude by looking to the (potential) future of subregional development structures in Flanders.

HOW TO INVOLVE CITIZENS ACTIVELY INTO THE DEVELOPMENT OF LOCAL MUNICIPALITY?

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Introduction
In last two decades, the role of local municipalities (cities, towns, villages) has been changed. It has to face with more challenging claims of modern society. From the modern local government is currently expected to be opened, efficient, to react promptly to needs of its stakeholders, and to promote their active participation in local community life and development activities.
The paper deals with the issue of relationships among local municipality and its stakeholders from the public governance point of view with special focus on relationship with citizen. It presents the research results of two surveys realized in local municipalities of Slovak Republic and investigates the various aspects of involving the stakeholders into the local governance.

Literature review

New approaches to the management of public sector appeared in 1970s and 1980s as New Public Management. The priority of this concept was to emphasize a role of citizen in public sector. However, last two decades showed that it is not enough to pay attention only to the citizen needs. The public sector, especially the local municipality should respect also the needs and interests of various entities situated on the local territory or which influenced it behind the local borders. The criticism of NPM resulted in different approach to the public management known as Public Governance (Kickert et al., 1997, Pierre, 1999, Rhodes, 2000; Pierre, Peters, 2000; Bevir et al., 2003; Berry et al., 2004). To define this term is quite difficult. In the literature, we can find a lot of various names, e. g. networking governance, collaborative public management, holistic governance, joined-up governance, but all of them are clustered in a few common features (Rhodes, 2000, Pierre, Peters, 2000; Paletta, 2012):

- governance with active participation of stakeholders from public, private and non-profit sector;
- the role of state/regional/local government as an authority establishing the legal and institutional frameworks;
- horizontal and vertical interactions among the stakeholders in public services coproduction and managing the public issues.

The basic principles of Public Governance as a management concept in the public sector are defined officially by OECD (1999, 2004), World Bank (1991) and European Commission (White paper on Governance, 2001). They include transparency, efficiency, effectiveness, participation of stakeholders and equality.

At the local level, the Public Governance is associated with the terms as Local Governance, Urban Governance or Metropolitan Governance. The specifics of this approach is mapped by many empirical studies (e. g. Vetter and Kersting, 2003 Denters and Klok, 2005 Denters and Rose, 2005 Bekkers et al., 2007). This managerial approach of local municipality uses new management tools and measurements, not strictly defined, based on negotiation, communication and creativity within the legal framework (Pierre, 1999, Pierre, Peters, 2000, UNDP, 2009). All decisions made should be a result of consensus among stakeholders from public, private and non-profit sectors, with strengthened citizen participation through new forms of participation (Plüss, 2013). The Local Governance declares all principles of Public Governance, even adds the sustainability and security (OSN, 1996). The principles and the concept as a unit is implemented to the practice by involving stakeholders into the programs of public policy, the process of public service production and delivery, and other tasks of public sector at the local level based on partnership and cooperation.

The growing need to build partnerships and cooperation as a core of local development declares several countries in Europe in their national documents (e. g. UK - White paper on Local Government, Ireland - Green Paper on Local Government). These principles have become key in the new program and strategic documents of the European Union for the period 2014 - 2020 (Fifth report on economic, social and territorial cohesion, the 2020 Territorial Agenda of the European Union in 2020) and are supported at all levels of the EU, in particular the Congress of Local and Regional Authorities and the Committee of the Regions (Council of European Local Authorities and Regions, 2013). Current development in local authorities (Petríková, 2011, Borseková, Vaňová, Vitálišová, 2015) shows that the active involvement of stakeholders in addressing public issues is a necessity. It confirms the number of new concepts in spatial development based on activation and participation of local communities (e. g. living labs, creative cities, smart cities, cittaslow, design innovations, etc.).

Methodology

In the first part of the paper, we introduce the theoretical roots of Public Governance, with special focus on Local Governance, as a concept demonstrating the importance of partnership and relationships with stakeholders. Then we analyse the state-of-art in building relationships of the local municipalities with their stakeholders on the example of Slovak Republic. We present the selected research results of 2 questionnaire surveys. The first one was realised among the representatives of local municipalities (mayors and its deputies) devoted to the identification of tools used in building relationships with stakeholders. The second one was oriented on the participation of defined stakeholders in the local planning process. The both research samples (100 municipalities) were based on quota sampling (2 quotas - size group of municipality and regions, in which the municipality is located), the representativeness of municipalities selection was confirmed by Pearson Chi-square test.

The paper presents partial results of few complex projects VEGA 1/0680/14 Creative industries as a key source of the public sector's intangible assets in the context of innovation and smart growth and KEGA 007UMB – 4/2015 Marketing in regional and local development.

Research findings

The precondition of well implemented methods and tools of Local Governance is to define the stakeholders of municipalities. Its composition is strongly influenced by the system of public administration in the country and by the competences and tasks of local municipality. In our researches, we focus on the research of municipalities in Slovak Republic. Based on our previous researches (Vaňová, Petrovičová, 2010, Petríková, 2011a, Borseková, Vaňová, Vitálišová, 2015) we defined the stakeholders of local municipality as citizens, members of local parliament, employees of local municipality, entities established by a local government, businessmen, investors, organizational associations, NGOs, church, partner municipalities, financial institutions, political parties, the state administration units, labour offices, media and universities.

Firstly, we map the character of relationships with stakeholders from the local municipality point of view. The research results present the figure 1.
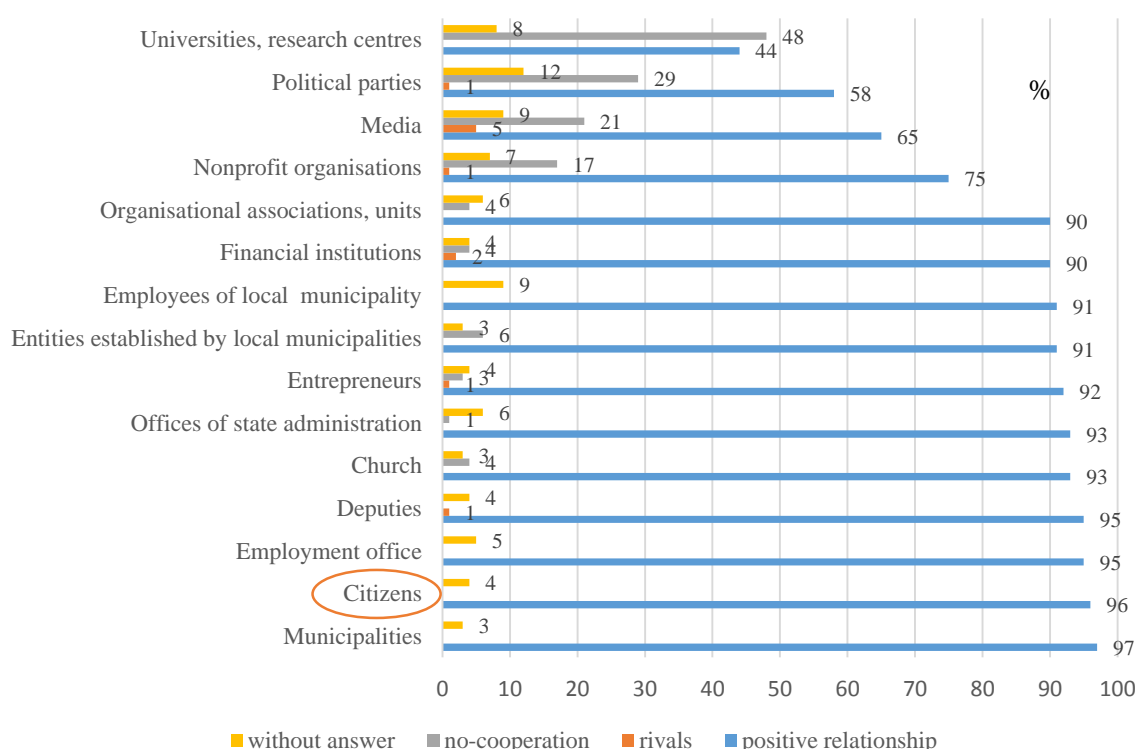
Figure 1 Relationships of local municipalities with the stakeholders in the Slovak Republic
Source: own workmanship of research results.

By the figure 1 the relationships are well developed with partner municipalities, citizens, employment offices, deputies (members of local parliament), church, and offices of state administration, entrepreneurs, entities established by local municipalities, employees, financial institutions and organization associations.
We focus our attention on the selected aspects of relationship between local municipality with citizens (table 1) and a few of them are tested by Spearman correlation test (table 2).

Table 1 Activity, conflicts in relationship between local municipality and citizens and its involving into the development activities

Activity in relationship (%)		Conflicts in relationship in (%)		Involving in the development activities in (%)	
only the municipality	3	without conflict	3	vision formulation	84,3
more municipality	57	once	27	aims formulation	74,5
equally	37	occasionally	60	commenting plans	75,2
more citizens	1	repeatedly	9	implementation of plans and concepts	76,9
only citizens	0	nonstop in conflict	1	control	52,4
without answer	2	without answer	0	informing about plans	36
Importance of relationships in points	9,66	Quality of relationships in points	4,08	Difference	-5,58

Source: own workmanship of research results.

The importance of citizens for local municipality is high on scale from 1 to 10 (1- less important, 10-the most important). The quality of relationship is quite low on the same scale (1-less quality, 10 – the top quality). The difference between investigated aspects is 5.58 points, what create a wide space for improving in participation and involving in public issues.

From the local municipality point of view, the local municipality is more active partner (60 % of respondents). Only 37 % of municipalities see the citizens as an equally active partner. The relationships with citizens are less conflicted. The municipalities involve the citizens mainly in vision formulation for the future development. However, the less intensity of their involving is in implementation of plans and concepts, in control or general informing about plans. These results again confirm the necessity to implement more effective tools how to persuade the citizens to be more involved into the local communal life.

The selected aspects of relationships between local municipality and citizens were tested by Spearman correlation test, what helps to identify the interdependences (table 2). By the first test we evaluated the correlation between the relationship quality and importance of relationships with citizens. The test confirms the weak direct correlation (more important = more quality). The second test deals with the correlation between the number of activities realized by local municipality and the importance of relationship. Again, the relationship is characterized by the weak direct correlations (more important=more activities). The last Spearman test evaluates the correlation between the conflict frequency and relationship quality. There is an indirect moderate correlation among these aspect in relationships with citizens (more conflicts=less quality).

Table 2 Spearman correlation tests on relationship between local municipality and citizens

Spearman's rho	Correl. Coeff.	Sig. (2-tailed)	N	Bootstrapa				Correl. Coeff.	Sig. (2-tailed)	N	Bootstrapa			
Correlation between the relationship quality and importance of relationships with citizens				Bias	Std. Error	95% Confidence Interval					Bias	Std. Error	95% Confidence Interval	
						Lower	Upper						Lower	Upper
importance	1	,	87	0	0	1	1	0,299	0,005	87	-0,001	0,089	0,111	0,457
quality	0,299	0,005	87	-0	0,089	0,111	0,457	1	,	87	0	0	1	1
Correlation between the number of activities realized by local municipality and the importance of relationship														
importance	1	.	100	0	0	1	1	0,295	0,003	100	0,001	0,099	0,091	0,483
number of activities	0,295	0,003	100	0	0,099	0,091	0,483	1	.	100	0	0	1	1
Correlation between the conflict frequency and relationship quality														
conflict frequency	1	.	87	0	0	1	1	-0,368	0	87	0,005	0,086	-0,541	-0,188
quality	-0,368	0	87	0,01	0,086	-0,541	-0,188	1	.	87	0	0	1	1

Source: own workmanship of research results.

Conclusions and recommendations

To summarize the research result in Slovak Republic, the local municipalities demonstrate the positive relationship with citizens, but the real quality of relationship is quite poor. The citizens are not enough involved into the public issues and development, so that is why we can doubt if the relationship with citizens is a partnership. To have an objective view on the situation we should compare these results with the research among citizens. It was done by our research in 2011(Petríková, 2011b), and we found out that the perception of relationship with local municipality by citizens is quite different. (See more: Vitálišová, 2015). However, the research results showed that the citizens want to be more involved in the public issues and planning process, want to participate actively on the production of public services – so they would like to participate at local governance.

The concept of Local Governance brings to the local municipalities in Slovakia a set of new tools how to strength the citizen relationship and the citizen loyalty. The marketing experts (Box, 1999; Fitchett, McDonough, 2000; Wright, Taylor, 2001; Cervera, Molla, Sanchez, 2001, Vitálišová, 2015) even recommend using as a suitable tool how to build partnership and cooperation relationship marketing. We strongly agree, because the relationship marketing is a systematic set of steps based on the marketing mix and methods overlapping the all stages of development planning. The practical experience shows that there are a lot of possibilities to implement this kind of marketing at the local level with aim to create the public policy and look for the common consensus of private, public and non-profit interests. The good practice examples of untraditional tools we can find in Estonia, where was introduced the electronic voting system in 2002 (see more: http://www.vvk.ee/voting-methods-in-estonia/engindex/, cit. 14. 10. 2015). There are many stories of successful implemented projects within the participatory budgeting (see more: http://pb.cambridgema.gov/, cit. 14. 10. 2015) or lot of living labs activities united in European Network of Living Labs (see more: http://openlivinglabs.eu/, cit. 14.10. 2015).

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INDIRECT ECONOMIC IMPACTS OF NATURAL HAZARDS: AN APPLICATION OF AGENT BASED MODELLING

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Introduction

In recent years, worldwide extreme natural hazards like earthquakes have produced significant and lasting effects on regional economics. For instance, from the economic point of view, the 2011 Japanese earthquake accounted for over 210 bn dollars in damages and the estimated cost to China after the 2008 event was 80 bn dollars (UNISDR, 2015). In order to understand how to estimate the direct and indirect economic impacts of natural hazards, it is necessary to examine how the infrastructures, which represent the backbone of the economic system, react and operate after an event. This is the main objective of our work, but in particular our aim is to evaluate the indirect impacts of a natural hazard. In other words, to analyse the wider economic impacts that an earthquake can produce in order to then estimate the possible investment to increase the resilience of the system. To carry out the work we are going to construct an analytical platform where the hazard simulation will be integrated with the economic model. In this specific analysis we will define the hazard infrastructure simulation model and briefly describe the economic model. After having set up these two components: hazard infrastructure model and economic model, we will combine them in a single analytical platform in order to study the various risk scenarios and economic impacts.

Case Study

The case study under examination is the area around the city of Bologna, Italy. On 20 of May 2012, Emilia Romagna registered a major earthquake magnitude 5.9 36 km north of the city of Bologna with two consecutive aftershocks of magnitude 5.2(Vervaeck and Daniell, 2012).
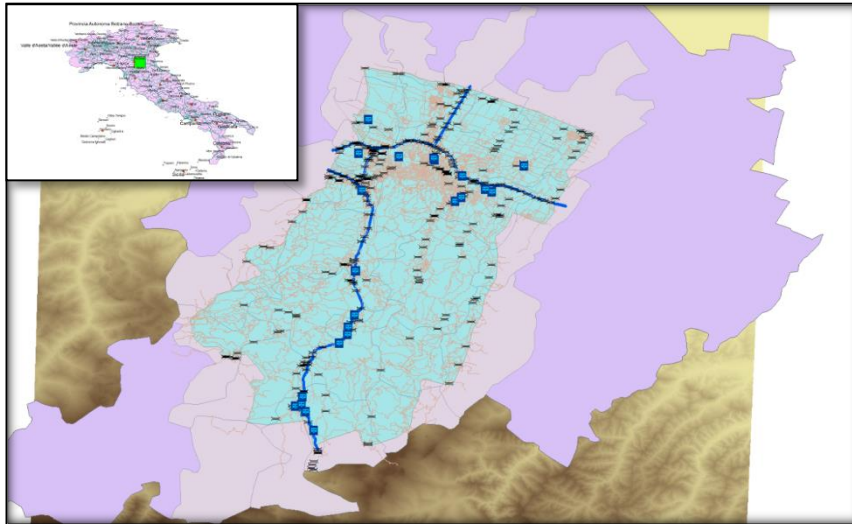
Figure 15 Case study area Bologna, Italy
Figure 1. Map of the case study area, Bologna, Italy

Hazard Infrastructure Model

Infrastructure interdependency is fundamental to the analysis of natural hazard. In recent years infrastructure sectors, by being increasingly interconnected, have also become highly vulnerable to many types of hazards. Operational interdependency, under single disruptive events, has been systematically studied in the literature. Less studied are the disruptions to infrastructure systems that create ripple effects to others, and through these ripple effects determine direct and indirect impacts on the economic structures across potentially vast regions. These impacts include shifts in service demand, contractions of supply chains, and changes in consumer behaviour.

Agent-based approaches and the system dynamic based approach are applied to simulate the interactions in the infrastructure system. A number of scholars (Takama and Preston, 2008, Wu and Lin, 2012, Gómez et al., 2014, Nagae et al., 2012) have developed these approaches in interdependence research in engineering.

In the field of risk analysis in infrastructure research, the agent-based model (ABM) is one of the most widely used and robust approaches (Giannopoulos et al., 2012). Given the structure of our analysis, we therefore propose the application of agent-based modelling (ABM) techniques to define the hazard infrastructure model. These are a class of computational models and simulations based on a large number of acting and interacting agents. The outcome of a simulation is principally determined by the agents at micro level, who interact among themselves and within their own environments. Through the study of a set of scenarios, AB modelling provides us with a window into the study of the behaviour of agents, and thereafter we can effectively test for possible policies. One of the advantages of AB models is that they are robust and less demanding than statistical risk models with regard to availability of aggregate data; this makes them especially attractive for policy analysis. AB models also differ from other conventional simulation models grounded in mathematical programming because they can capture the interactions between actors explicitly (individual infrastructure, for example), allowing for the study of transaction and information costs. Second, these models can fully account for the spatial dimension: areas exposed to the natural hazards for instance, and hence the role of internal transport costs and the physical features of land. Consequently, the explanatory power of these models is in line with our research questions, since we aim to examine agent interactions in relation to the cascading effects of the natural hazard events where space needs to play a decisive role.

In our case we will consider the interactions among the different infrastructures that constitute the road network system: roads, tunnels and bridges. To simulate the road network disruption scenario in a natural hazard, we examine the behaviours of the considered three sets of agents (roads, tunnels and bridges). The three agents interact through the traffic flow, and endogenous shocks, such as earthquakes, are applied to disrupt the interactions among the infrastructures. In Figure 16 we display the ABM platform.
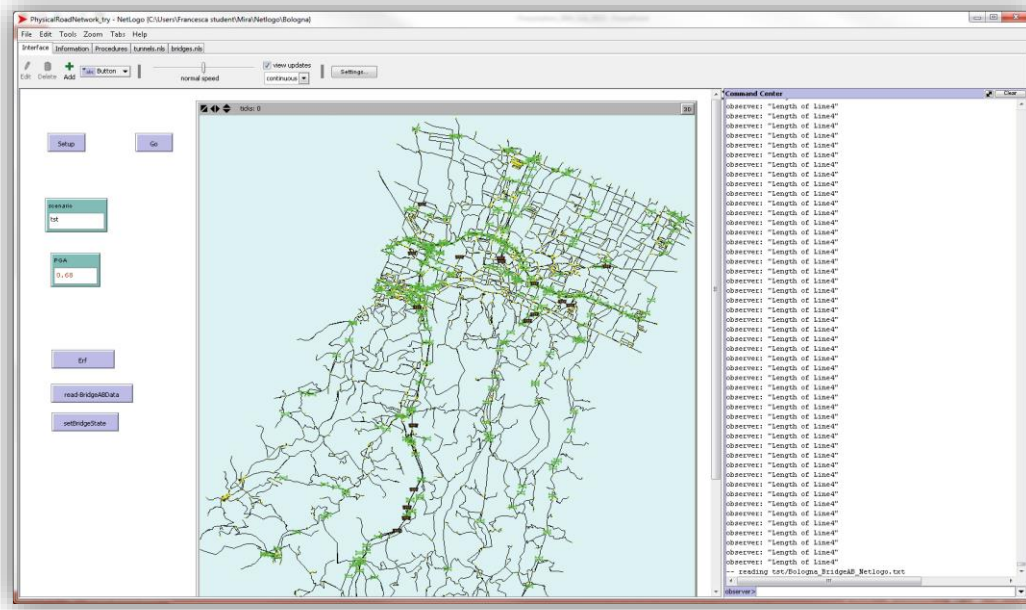
Figure 16. Simulation model user interface

The study area is represented by 833*1079 rectangular grid of square cells (50*50m), each cell is regarded as a land patch. The ground motion map that describes the earthquake intensity of each grid is imported into ABM to represent the earthquake hazard. In ABM, one fundamental concept is to describe the agents and their behaviour rules, the behaviour rules describe how agents interact with each other and their environments. GIS data has been imported into ABM to set up the geographic context of the simulation. In Figure 2 we show the behaviour rules of the bridges set (Argyroudis et al., 2015). Therefore, in accordance with state-of-the-art fragility functions for roads, bridges and tunnels, we have similarly extrapolated from the literature the behaviour rules of the other two agents under consideration.
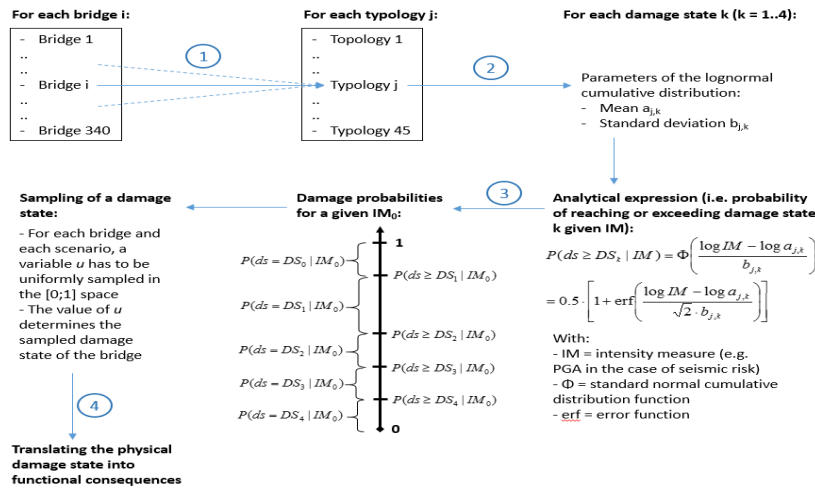
Figure 17 The process of identifying bridges' global damage states, based on the fragility curve

Results

In Figure 4 the agents of our ABM are shown: black lines represent the road network of the Bologna area. The bridges are represented by green dots and black rectangles represent the tunnels.

Figure 18 Import of road network, bridge and tunnel data into ABM

In the following Figures 4, 5, 6, 7, and 8 we show the different scenario behaviours, in relation to traffic flows, of the roads, tunnels and bridges under the earthquake events.

The analysis demonstrates the presence of cascading effects among the interactive agents/infrastructures, that is, the impact of disruption in multiple infrastructures due to the earthquake produces ripple impacts across a wider regional area. Furthermore, when a singular infrastructure is significantly disrupted in its operation, this disruption determines substantial cascading effects across the other infrastructures.

The analysis also defines the most resilient and vunerable elements for each set of agents. This is an important consideration because it allows us to create a priority list in relation to technical interventions for increasing overall resilience of the system. The sensitivity analysis confirms the robustness of the results obtained in the ABM simulation.
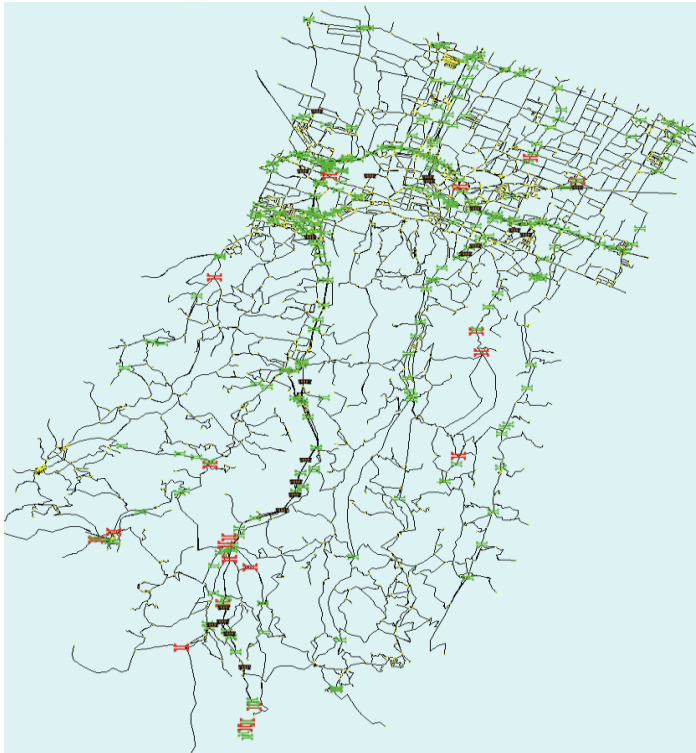
Figure 19 The scenario of bridge damages due to an earthquake
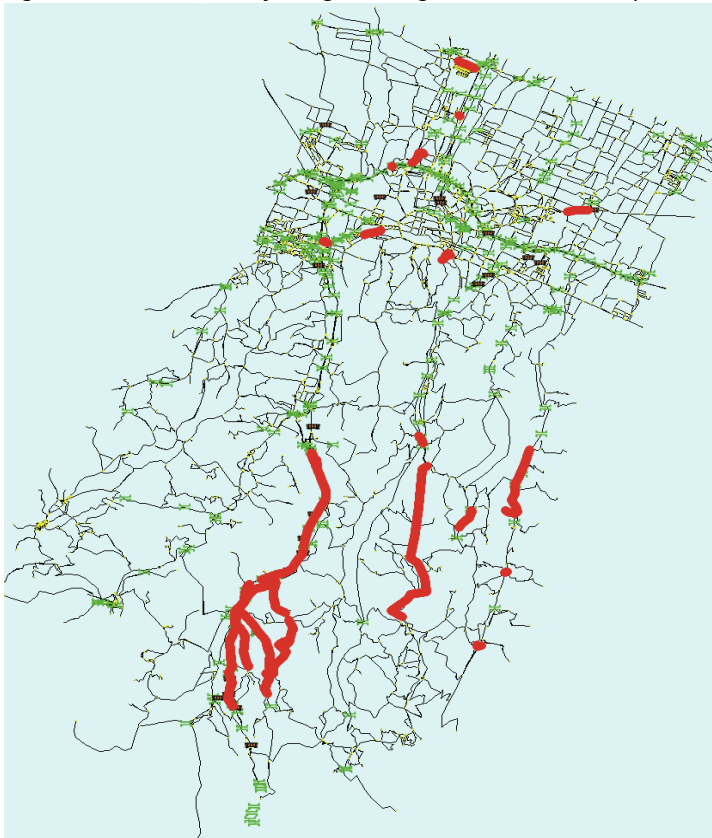
Figure 20 The scenario of road network disruptions due to a south-centred earthquake
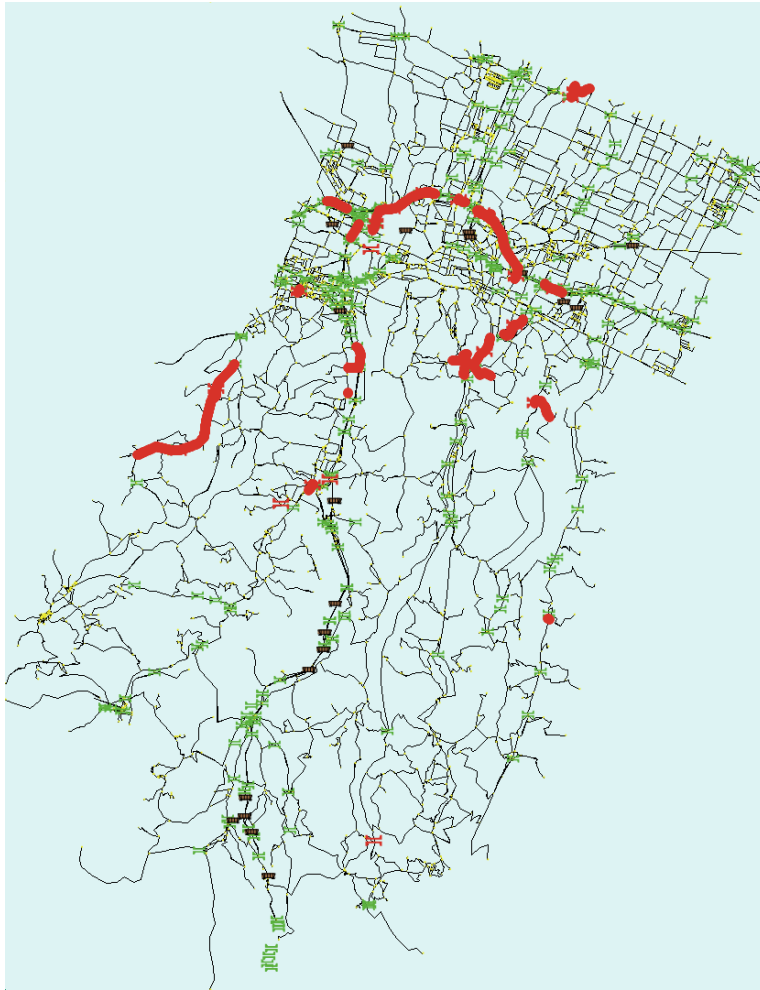
Figure 21 The scenario of road network disruptions due to a north-centred earthquake
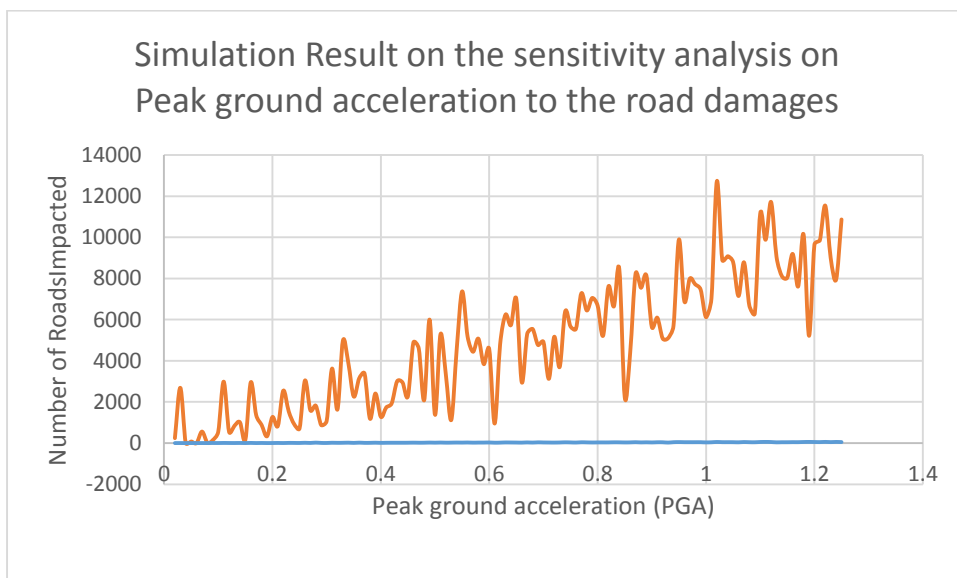
Figure 22 Simulation Result on the sensitivity analysis on Peak ground acceleration to the road damages
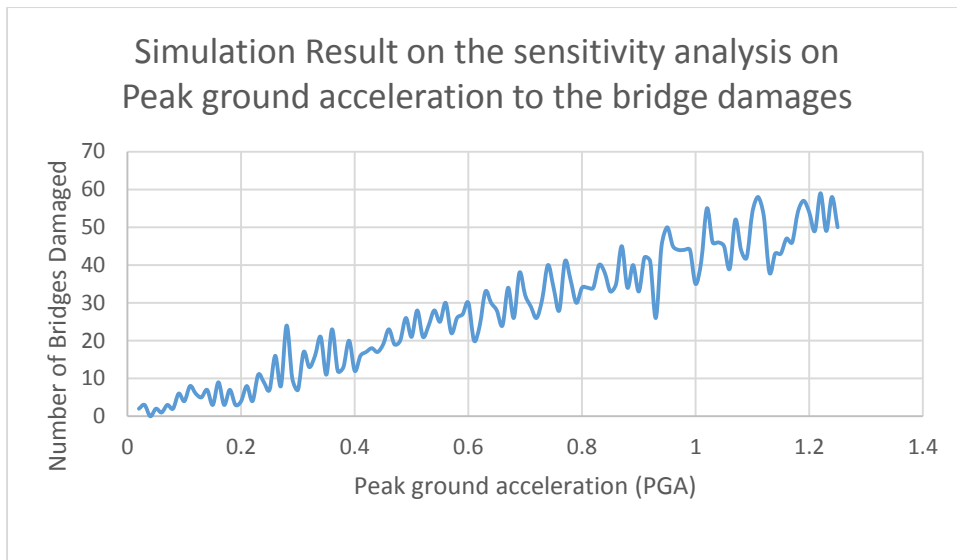
Figure 23 Simulation Result on the sensitivity analysis on Peak ground acceleration to the bridge damages

Next steps

Our next step in the research is to integrate the ABM model with an economic model in order to estimate the indirect wider economic impacts of natural hazards. Natural hazard economic impacts can be divided into two categories: direct and indirect economic impacts. Direct impacts of natural hazards refer to the direct and physical damage in the affected area. The indirect impacts represent the effect(s) that natural disasters can produce on the economic system overall; in our research we consider a wider geographical scale than merely the affected area.

For our analysis and estimation of the wider economic impacts, we consider the model of Ecola and Wachs (2012), which in our case is redesigned to evaluate the decrease in GDP of the various Italian cities due to the natural hazards.

However, one of the main problems we need to overcome for the implementation of the Ecola and Washs model is the lack of data about city/region GDP. In our context we consider 90 city regions which are origins and destinations of travel flows. We therefore assume, based on comparable studies, to express GDP per capita in relation to traffic flows.

When considering the Italian traffic flow data, we verify high correlation between travel demand and GDP per capita. Given this result, we can proceed to implement the model and apply the modified gravity model using travel demand to express the variation in GDP.
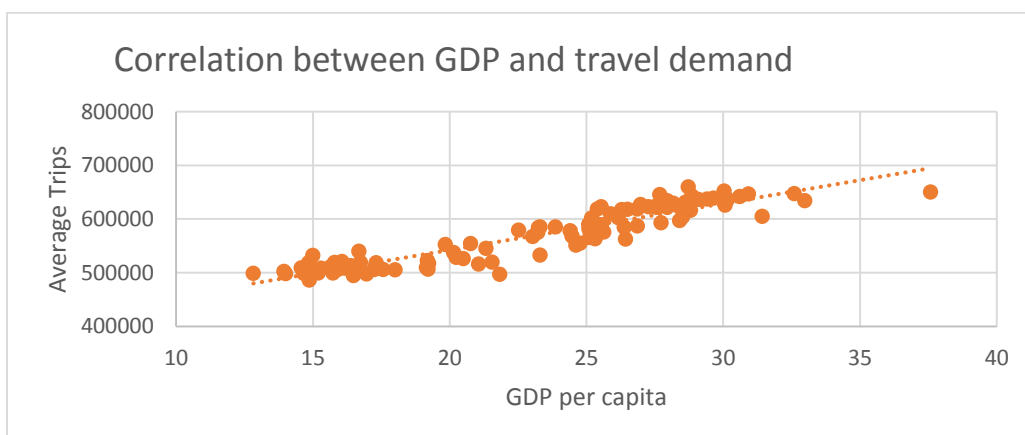
Figure 24 Correlation between GDP per captia and travel demand in Italy cities

We assume that when an earthquake occurs, given that the travel demand between city/region i and city/region j has changed to TRD_{ij}' , we obtain that

$$Log\left(GDP'_i * GDP_j'\right) = b_0 + b_1'^{\log(TRD'_{ij})} + b_2 \log\left(D_{ij}\right) + \varepsilon^2, \qquad (1)$$

where GDP'_i and GDP_j' represent the city/region GDP after the earthquake. We express the right side of the equation as

$$M = b_0 + b_1' \log\left(TRD'_{ij}\right) + b_2 \log\left(D_{ij}\right) + \varepsilon^2 \qquad (2)$$

Equation (1) can be simplified as

$$Log\left(GDP'_i * GDP_j'\right) = M \qquad (3)$$

Then

$$\left(GDP'_i * GDP_j'\right) = 10^M \qquad (4)$$

Assuming that the GDP ratio of origin and destination stays the same:

$$\frac{GDP'_i}{GDP'_j} = \frac{GDP_i}{GDP_j} = \mu \qquad (5)$$

Based on the simultaneous equations:

$$\begin{cases} \left(GDP'_i * GDP_j'\right) = 10^M \\ \dfrac{GDP'_i}{GDP'_j} = \mu \end{cases} \qquad (6)$$

The solutions of Equation (6) are: $\qquad (7)$

$$GDP'_i = \sqrt{10^M \mu} \qquad\qquad GDP'_j = \sqrt{\frac{10^M}{\mu}}$$

With these solutions we will be able to estimate the indirect wider economic impacts of the cities under consderation. Using the data of the AGM we can simulate different scenarios and thus verify how GDP varies in the different regions.

Conclusion

The Agent-Based Model has proved to be a powerful tool in our analytical aim to aggregate complex interdisciplinary factors and methods for simulating natural hazards' cascading effects on infrastructure systems. Using the application of ABM, we are able to demonstrate in this work how to simulate the behaviours of three sets of agents (roads, bridges and tunnels) when an endogenous shock such as an earthquake affects their operation and resilience capability. We have also briefly mentioned the next logical steps as they relate to our analysis of the wider economic impacts of earthquakes demonstrated in the Agent Based Model results. In doing so, we underscore the importance of technical information and modelling, which are necessarily strongly interrelated with the economic modelling and impacts.

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INDUSTRIAL CLUSTER GOVERNANCE AND ENVIRONMENTAL UPGRADING:INCHEON METAL CASTING CLUSTER AND BANWOL-SIHWATEXTILE DYEING CLUSTER, SOUTH KOREA

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Introduction

The industrial cluster literature has traditionally focused on small producers' economic success based on a combination of external economies and local joint actions. In recent years, this research focus of the industrial cluster literature, in linking with the global value chain literature, has widened and embraced more social effects of agglomeration economies. One of these emerging research subjects in the industrial cluster literature is environmental performance via clustering of small producers. However, environmental upgrading is still a less investigated theme in the industrial cluster literature. In this regard, this paper seeks to explore how industrial clusters' environmental upgrading is patterned in accordance with the characteristics of cluster governance by drawing on empirical evidence from the Incheon metal casting cluster and the Banwol-Sihwa textile dyeing cluster.

Environmental Concerns in Industrial Clusters

Environmental damage such as pollution and resource depletion can be understood as a typical external diseconomy. Environmental externalities have been increasingly analysed in depth in the cluster literature. The collective efficiency perspective of industrial clusters (Schmitz, 1995; Schmitz and Nadvi, 1999) has interpreted cluster firms' responses to environmental externalities in the context of joint actions and institutional support (Kennedy 1999; Crow and Batz 2006; Almeida 2008; Konstadakopulos 2008). The other strand of studies on cluster upgrading, the global value chain perspective (Gereffi, 1999; Humphrey and Schmitz, 2004; Nadvi, 2008;), argues that clustered local producers tend to upgrade their environmental management systems in order to address corporate social responsibility (CSR) and international environmental standards driven by global lead firms (Tewari and Pillai, 2005; Lund-Thomsen and Nadvi, 2010). These empirical studies show that clusters' environmental upgrading pattern can be diversified in accordance with the types and characteristics of cluster governance.

By recognising the importance of cluster governance, Puppim-de-Oliveira (2008) suggests a framework for cluster upgrading; market-driven upgrading, CSR-driven upgrading and regulation-oriented upgrading. Gereffi and Lee (2014) develops this framework in an elaborative manner with the three aspects of cluster governance: private governance, public governance and social governance. However, given that this cluster upgrading framework is mainly based on the empirical evidence, it is necessary to investigate further in order to explain the evolutionary dynamics of cluster upgrading under synergistic governance.

Environmental Performance of the Banwol-Sihwa Textile Dyeing Cluster
Business Structure

The Banwol-Sihwa textile dyeing cluster is a part of the Banwol-Sihwa Industrial Complex which is one of the biggest industrial district located in the mid-west coastal area of the Korean peninsula. The cluster is an agglomeration of 80 dyer firms. The vast majority of the textile dyeing firms are locally owned single-plant SMEs. The other essential feature of the Banwol-Sihwa dyeing cluster is that it is an export-oriented industrial cluster. Most dyeing and printing units in the Banwol-Sihwa dyeing cluster are suppliers to international apparel brands and global retailers. In other words, the Banwol-Sihwa dyeing cluster is a key spatial concentration of the dyeing and printing stage of the global garment value chain.

Environmental Crisis

There are three representative pollutants generated from the textile dyeing process: effluent, odour, and sludge. The cluster firms located in the Banwol-Sihwa textile dyeing cluster have experienced a series of environmental crises with regard to their three typical pollutants. The first pollution case in which the dyeing business was involved was water pollution in the 1960s-70s. As the effluent discharged from the textile dyeing mills was identified as a major cause of water pollution in Seoul, the government ordered the effluent-emitting firms to leave the capital city. Eventually, the textile dyeing firms were banished to the Banwol-Sihwa region. The second environmental crisis that the textile dyeing sector faced was the odour issue. Due to the odour emanating from the dense industrial activities, the textile dyeing cluster was in conflict with the local residents. In parallel with the pollution crises at the local level, the Banwol-Sihwa dyeing cluster has faced a series of global challenges.

Given that the Banwol-Sihwa dyeing sector is part of the global apparel value chain, they have been required to comply with their buyers codes on environmental management as well as to be qualified for international environmental standards like ISO14001.

Environmental Upgrading

The initial environmental upgrading in the Banwol-Sihwa textile dyeing cluster was building common effluent treatment plants. As the government had condemned the textile dyeing firms to exile, they organised their business cooperatives to specialise in operating common effluent treatment plants as well as managing other common issues. The business cooperatives led the joint action to equip the textile dyeing firms with odour control facilities, since the cluster was in conflict with local residents on the odour issue. Yet another environmental upgrading implemented in the Banwol-Sihwa textile dyeing cluster was establishing industrial symbiosis networks with the other industrial sectors. There are, currently, two industrial symbioses operating in the cluster: the wastewater heat exchange network between the textile dyeing cluster and its neighbouring co-generation plants and the effluent sludge recycling network between the textile dyeing cluster and a cement manufacturing plant.

Environmental Performance of the Incheon Metal Casting Cluster

Business Structure

The Incheon metal casting cluster began to operate as an agglomeration of about 50 foundries. As in the Banwol-Sihwa textile dyeing cluster, most foundries in the Incheon metal casting cluster are locally owned single-plant SMEs. In Incheon, the steel industry, the metal process industry, the machinery industry and the automobile industry are in input-output relationships. As a part of this metropolitan city's huge industrial linkages, the agglomerated foundries supply their products to the machinery industry and the automobile industry in the domestic market as well as the overseas market.

Environmental Crisis

The foundry industry is known as a heavy polluter because the manufacturing process generates a variety of pollutants such as waste foundry sand, foundry dust and odour. For this reason, the metal casting sector had to re-locate their plants from Seoul to Incheon in 1983 in the same way as the textile dyers. Even after this first environmental crisis, which took the form of deportation, the foundries have continuously suffered from local government regulation and petitions from local residents. Finally, the cluster firms have decided to move their nest to yet another region and their collective migration plan is under way.

Environmental upgrading

In fact, the metal casting cluster has made some progress in its environmental ugrading. When the foundries were transplanted from Seoul to Incheon in accordance with the administrative order, they also organised their cooperative. This cooperative played the integral role in locating a site where the metal casting cluster could minimise its environmental damages to neighbouring communities. Second, since their clustering in Incheon, the foundries have entirely recycled waste foundry sand. In addition, the cluster firms have regularly upgraded their pollution prevention facilities in order to comply with environmental regulations. However, the metal casting cluster's environmental performance is limited, compared to the Banwol-Sihwa textile dyeing cluster. What is worse, as the foundries are planning to move their cluster into another region, they now hesitate to invest in upgrading their current environmental management systems. In other words, the metal casting cluster is beginning to turn to environmental downgrading.

Comparative Lessons

Although the Banwol-Sihwa textile dyeing cluster and the Incheon metal casting cluster have much in commons in terms of their industrial structures and environmental crises, the foundries have shown limited progress in their environmental management while the dyers has achieved impressive progress in environmental upgrading. Arguably, the gap in environmental upgrading between the two industrial clusters results from the different characteristics of the two clusters' governance. Based on the three types of cluster governance suggested by Gereffi and Lee (2014), I identify how the different characteristics of the two forms of cluster governance have differentiated the two clusters' environmental upgrading strategies.

First, being under private governance, the textile dyeing firms are constrained by global buyers and thus recognise the importance of international environmental standards, while the foundries rely on reducing environmental management costs or obeying regulations under the leadership of their business cooperative.

Second, in terms of public governance, various institutions such as public agencies and local universities cooperate with the textile dyeing firms offering technical and financial assistances, while the local government mainly relies on enforcement in regulating the mental casting firms in Incheon. Finally, with regard to social governance, the Banwol-Sihwa region has had a consultative body through which the business sector can communicate with local stakeholders, while the Incheon region has no formal channel through which the metal casting cluster can interact with local communities.

		Private Governance	Public Governance	Social Governance
High road to environmental upgrading	*Coordination power*	Lead firm	Public institutions	Local community
	Scope of cooperation	Global inter-firm linkages	Firms-Institutions	Private-Public-Civil
	Mechanism	Compliance to buyer codes	Technical and financial assistance	Social consultation
Low road to environmental upgrading	*Coordination power*	Business association	Government	-
	Scope of cooperation	Local inter-firm linkages	Private-Public	-
	Mechanism	Cost reduction	Enforcement	Conflict avoidance

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