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## FOREWORD

The analysis of urban and regional development affairs is a complex task, and one that has many competing and worthwhile perspectives, on a huge array of issues whose importance and approaches to analysis often varies between countries. In many ways, this volume testifies amply to such themes and illustrates the rich tapestry of problems, and their analysis and remedies in both developed and developing economies. And of course systems of governance also vary significantly between countries, so that ideas and analysis generated in one jurisdiction may not apply readily to others. This said, much can be gained from reading about issues, their form, resulting problems, and potential solutions in other countries, whether involving governments, the market sector or both together. As we, the guest editors see it, the articles in this issue of *Jura* could well spark new ideas among readers about the definition and analysis of spatial problems, whether urban or rural, and the success or otherwise of attempts to manage them.

The contributions also cover such diverse issues as infrastructure, job opportunities, income, levels of welfare, housing, cultural issues, traditions, and the respective roles of government and the market sector. Indeed, the swirl of perspectives and ideas on all these issues will become ever more important in our current age which is dominated by a huge array of transformative technologies. So there is much to learn from how different countries or regional administrations manage their urban, regional and rural affairs in our complex and uncertain world. In assembling this collection of papers the editorial team also saw it as their duty to help contributors whose first language was not English to assist them in improving their expression and delivery of ideas.

*Michael SOFER, Tony SORENSEN, Jerzy BAŃSKI*  
Guest Editors



## SOCIAL CROWDFUNDING: A NEW MODEL FOR FINANCING REGIONAL DEVELOPMENT?

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**Abstract:** Crowdfunding is an increasingly attractive source to fund social projects. However, to our best knowledge, the study of crowdfunding for social purposes has remained largely unexplored in the literature. This research envisages a detailed examination of the role of crowdfunding on the early-stage of the social projects at regional level. By comparing the characteristics of the projects available in the Portuguese Social Stock Exchange platform with others that did not use this source of financial support, we envisage to show the critical role of crowdfunding on regional development. The use of inferential techniques (Chi-square test, the Cramer's V statistic, the Goodman and Kruskal  $\lambda$  and the odds ratio) demonstrates that the use of the Portuguese Social Stock Exchange platform was linked to the geographical location of the social venture as well as its geographical scope. Also, social ventures located on rural regions are more likely to use social crowdfunding platforms than social ventures located in urban areas. Further, the circumstance of having the social ventures acting at a local or regional level seems to be strongly associated with the possibility of using crowdfunding for financing social projects.

**Key Words:** *social entrepreneurship, crowdfunding, social crowdfunding, regional development.*

### Introduction

The term crowdsourcing is frequently used as a convenient label for a diverse range of activities and projects involving public participation. It is a concept based on business and production that was coined in 2006 by Jeff Howe in the article: "*The rise of crowdsourcing*" (Oomen et al. 2014, Ridge 2014). The idea behind the concept derives from the application of open source principles to fields outside the software industry.

Crowdsourcing in social entrepreneurship benefits from its ability to draw upon the notion of common social causes in invitations to participate, and this may explain why projects generally follow collaborative and cooperative models, rather than competitive ones. Hence, the term crowdfunding (CF) derives from the concept of crowdsourcing and could be characterized as the collective cooperation of people who pool their money and other resources together to support efforts initiated by others.

In the digital world, social CF can be defined as an open call for raising funds, essentially through the internet, in the form of donation or in exchange for some sort of reward in order to support initiatives for social goals (Tomczak and Brem 2013, Ridge 2014). The ability of digital technologies to provide almost instantaneous data gathering and feedback, computationally validate contributions and the ability to reach both broad and niche groups through loose networks have all been particularly important in different situations (Ridge 2014).

The study of social CF in the digital world and its role on regional development has remained largely unexplored in the literature, specifically through Social Stock Exchange platforms. Lehner (2013) reinforces this assertion claiming for a more rigorous and robust conceptual and empirical research to address and inform policy makers and practitioners likewise in order to increase the success of CF of new (social) ventures.

The main goal of this research is to gain deeper knowledge on the use of CF for social purposes and to examine its role on the support of social projects that contribute to the development of local communities. So that, the study takes an exploratory approach to understand whether this new financial instrument has been used at local or regional level by social entrepreneurs. To attain this objective, we examine the main characteristics of the social projects available on the Portuguese Social Stock Exchange (PSSE) platform and we contrast them with other social projects financed by other sources. Doing this, we aim to display the main differences in the background of the projects' promoters, and we scrutinize the regional orientation of the projects. By exploring these issues, we hope to enhance the body of knowledge on social entrepreneurship and regional policy and to make practical contributions for social entrepreneurs, policy makers and the managers of similar platforms.

This paper is organized into several sections. The next section emphasizes the role of social entrepreneurship, regional policy and social CF platforms as a source of financial support for social ventures (SV). Section 2 contains a short literature review on CF for social purposes. Section 3 outlines the methodological aspects concerning sampling and data collection. Section 4 elaborates on the statistical analysis and discusses the findings of the study. The conclusion section provides a summary of the paper, it explores policy implications and it presents the limitations of the study.

### **Social entrepreneurship, regional policy and the Portuguese Social Stock Exchange**

*Social entrepreneurship* has its origins in the entrepreneurs' spirit and in the way they face social issues, by searching for an innovative way to address permanent social necessities for which classic mechanisms show serious difficulties in providing solutions. Therefore, social entrepreneurs have a key role to play in identifying social problems and developing new ways to help solving different sort of social problems.

Social entrepreneurship has been recognized as a helpful instrument of the social and economic policy, particularly when dealing with unemployment, social exclusion and sustainable regional and local economic development (Alvord et al. 2004, Quintão 2004, Friedman and Desivilya 2010, Borzaga and Galera 2012, Lambro 2012, Parente et al. 2012). The European Commission (BEPA 2011) recognised very early the importance of social organisations in economic growth and social innovation, through the contribution of such organisations to the development of societies endowed with higher levels of democracy, activism and social cohesion. Feld (2012) and Azmat (2013) recognize the potential of social entrepreneurship to attenuate the more persistent social problems and to promote wealth in communities and societies through innovative strategies and creative solutions. According to the authors, social entrepreneurs usually adopt innovative approaches with the potential to take a positive and critical role in poverty reduction and to help with the promotion of sustainable growth in developing countries. Likewise, Yiu et al. (2014) argue that social entrepreneurship plays an important role in the community development of emerging economies, and Nega and Schneider (2014) highlight the significant role of social entrepreneurship in economic development. For McAnany (2012), social entrepreneurship has a great potential to contribute to: (i) social change; (ii) the development of local communities; (iii) the enhancement of economic growth; (iv) poverty reduction; and (v) environmental sustainability. Social entrepreneurship could promote structural adjustments and economic revitalization by launching extensive new services for disadvantaged communities. However, not all

communities affected by social problems offer the same potential to capture resources (human, financial, physical) to satisfy the community needs.

Social entrepreneurial activities are driven by individuals although they are heavily influenced by the environment, which comprises all the external influences that affect the entrepreneur's behaviour and performance (Covin and Slevin 1991, Cajaiba-Santana 2010, Mair 2010, Welter 2011). Environmental influences can be classified as economic, technological, demographic, social, cultural, and governmental/institutional (Hill and Jones 2013). Indeed, SVs are not developed in a vacuum but they are constrained by a particular environment (Weerawardena and Mort 2006).

As stated by Katz and Kahn (1966) in the open system theory, the emergence of organizations (mainly private companies) derives from the interaction between agents and environment, which suggests a strong influence of the environment on the creation of organizations. The same applies to social entrepreneurship, as the environmental forces could incite or deter the launching of new SVs (Ziegler 2009, Ferri and Urbano 2010, Mair 2010).

Social problems are increasingly complex and interlocking even in local communities. The idea that a social entrepreneur can design and implement a solution for a local problem without financial support is misleading. A social project to grow depends both on government and the existing network of stakeholders for financing the local initiatives. However, since the global financial crisis of 2007, social entrepreneurs are struggling with their most difficult challenges in the past half-century. Therefore, new instruments for financing regional and local development policies are needed and can be adopted by public and private organizations.

*Regional policy.* Today's challenges have taken an increasingly social (Hoogendoorn and Hartog 2011) and territorial (Rocha-Trindade 1996, Ferreira Silva and Cadima Ribeiro 2014) dimension. Nonetheless, the social problems tend to be felt differently from region to region (Polèse 1998, Souziazis and Antunes 2006, Cherodian and Thirlwall 2015). This reality has to do with resources endowment, with productive specialization but, in most of the cases, with regions' capabilities, including leadership and entrepreneurial initiative. As underlined by Kuznets (1973), long ago, in what concerns development, not everything is explained on the basis of resources endowment. In a much more recent paper, Cherodian and Thirlwall (2015), among others, have subscribed to this idea. Having that in mind, the search for new solutions to social and territorial problems have to rely on innovative instruments. In regards to regional development, the endogenous resources and capabilities of territories are critical (Romer 1986, Krugman 1998, Maillat 2002, Vazquez-Barquero 2006, Dallabrida 2010, Cherodian and Thirlwall 2015).

One of the most enduring societal challenges, no matter if we are following a macroeconomic or a regional approach, is the fight against unemployment. This phenomenon is often linked to increased crime and social exclusion, with long-lasting consequences, not only for those losing their jobs, but also for their children, who have fewer opportunities in the society (BEPA 2011). Rural and peripheral populations tend to feel the problems of unemployment and social exclusion more deeply (Rocha-Trindade 1996, Krugman 1998, Polèse 1998, Ferreira Silva and Cadima Ribeiro 2014).

In times of economic and financial crisis, public and private institutions have scarce financial resources to commit to social causes or to be more selective when applying their funds (Acs 2010, Karlsson et al. 2010, Hoogendoorn and Hartog 2011). In such a context, policy makers can play a strategic role in fostering social entrepreneurship by functioning as catalysts to simplify the legislative environment and to develop policy initiatives (taxation) that support the accomplishment of social organizations' mission. That is, even if public money is scarcer, solutions (policies) are available or must be found to deal with the difficulties faced by deprived

social groups and depressed territories.

Financial resources are vital for starting new social ventures (De Clercq et al. 2013), as the level of financial system development within a nation is highly consequential to entrepreneurial activity (Levie and Autio 2008). A highly developed financial system frequently includes financial institutions, helping new social entrepreneurs to access financial resources. To finance the social venture borrowing funds from individual donors and social responsible firms may be inadequate. New financial mechanisms, such as CF, could be used to provide funds with less onerous conditions than in systems where financial capital is often provided by banks and at higher interest rates. In such cases, the cost of forming a new social venture may be prohibitive. Thus, in societies in which financial capital is more accessible and affordably available to new social ventures from informal investors or advanced financial mechanisms, new social ventures will be more likely to flourish (Whitley 1999). The social entrepreneurs' access to finance at the early-stage of the social project might be very demanding. But, according to the World Bank (2013), social CF is a powerful force for change that can generate opportunities to fund social projects.

As noted earlier, social entrepreneurs can have difficulties to fund social projects due to factors such as a lack of a 'track record', which make the cost of agreeing finance for relatively small amounts of extremely high, or of a higher perceived risk in investing in social institutions that depend most exclusively on the state (Gajda and Walton 2013). The government financial support can be crucial for running a social organization in times of increased pressure to respond to local problems (Shockley and Frank 2011, Mitra 2012). In addition, the provision of a wide range of training, information and advice could assist potential or existing social entrepreneurs to improve learning and developing their managerial skills. Courses on issues such as regulations (taxation), management practices (marketing, strategy, human resources, logistics, motivation, leadership) and technical training could be useful to assist social entrepreneurs on the everyday tasks. In this regard, following Naghiu et al. (2005), one must keep in mind that a set of historical, cultural, educational and organizational factors will always determine the capability of the actors of a certain territory to generate and accept multi-faceted social change. Thus, some of the external stimulus already mentioned might be required in order to promote social entrepreneurship.

One must be aware that a strong start-up infrastructure (buildings, logistics system, etc.) is imperative even for social entrepreneurs. In any case, we assume that, besides for general infrastructures, resources can be gathered from the community via social entrepreneurs or CF. To attain this objective, based on the perceived value for the local community, a strong appeal must be made by the social entrepreneur to the solidarity and generosity of the internal and external community, namely, to those who keep an affective relationship with the community and the territory where the social venture will be implemented. Exploring this affective link is surely rewarding as it can be seen when people have to deal with dramatic events (natural disasters, terrorism, refugees, etc.) that take place somewhere all over the world and are public through the news of the traditional media (Press, TV, etc.) and the various social media (Facebook, Twitter, You Tube, etc.).

Social entrepreneurship can also act as a force for regional development through improving access to and support for developing new technologies. Cooperation of social institutions with universities and government research agencies should promote technology transfer in order to develop new products or services for disadvantageous people (Berzin et al. 2014). Resources and local know-how, together with scientific knowledge, might provide sustainable solutions for social and regional problems no matter their complexity (Cadima Ribeiro and Freitas Santos 2005). The social mission of universities equally matches with this kind of demand but, often, social actors and territories are not able to establish a sustainable relation of cooperation

between the different actors.

The continuous scan of social problems in the society and the search of new responses according to the available resources are symptomatic of an entrepreneurial culture, which should, in terms of behavior (team work, leadership) and a more positive attitude towards social problems, improve social and civic entrepreneurship. Such a culture is needed in certain territories and circumstances and it can be disseminated through the practice of systematic social innovation, education and role models (Naghiu et al. 2005). A general commitment towards the development of this culture should be pursued by the government (national, regional and local levels) and the more dynamic agents of the entrepreneurial ecosystem.

*Portuguese Social Stock Exchange.* The Social Stock Exchange model was adopted by the United Nations as a case study and it is recommended as an exemplary case to be followed by other stock exchanges, also receiving the UNESCO endorsement (Grecco 2010). The Portuguese Social Stock Exchange (PSSE) was created in 2009 as a social initiative that aimed to reproduce, with some adaptations, the environment of a conventional stock exchange. The main objective is to mobilize resources for promising new SVs.

Despite the similarities, the PSSE is slightly different from a traditional stock exchange, since the concept of a social investor (used for individuals or entities that provide funds to the projects) corresponds to a donor. Likewise, following the logic of capital markets, social shares represent the unit of donation established by the PSSE (1 euro each). The owners of the projects may issue shares that can be acquired by potential investors in order to generate funds for the social venture. At present, projects listed on the PSSE do not have a 'price' like their counterparts in the conventional stock exchanges. However, PSSE promotes the visibility of the selected projects, leverages the resources available for the project and it facilitates the contact between donors (social investors) and civil society organizations undertaking relevant work in the fields of education and social entrepreneurship.

In Portugal, projects carried out by nonprofit Portuguese civil society organizations are eligible to apply for membership of the social stock exchange. The selection of projects is made by a specialized technical team, and the criteria for assessing these projects are, among others, the objectives of the project, its innovative nature, its scalability and replicability, the expected social impact and its technical and financial viability. Through the PSSE website ([www.bvs.org.pt](http://www.bvs.org.pt)), the persons (or entities) interested in investing in social causes can access a brief description of projects that need funding. There are two thematic investment funds, one in the area of education and the other in the area of social entrepreneurship. The PSSE currently has 26 projects, 8 of which have gathered all of the necessary funding.

The existence of a mediator (PSSE), which tries to adjust the demand for grants with the projects of social entrepreneurs, increases the transparency and scrutiny of the whole process. These projects require a strong commitment in terms of their governance and accountability. Social investors may follow the projects and evaluate the social impact through the analysis of reports published in the website of the PSSE.

### **Crowdfunding and social entrepreneurship: a literature review**

The literature of the social CF focusing on alternative sources of donation based financing (traditional vs. social CF) is scarce (Belleflamme et al. 2014, Mollick 2014). Likewise, to our best knowledge, the analysis of the regional impact of CF platforms on financing social projects in contrast with the traditional donation model does not exist. In the absence of a specific framework, we adapt the current literature on the process of choosing the best alternative forms of CF financing from the social entrepreneur's (capital seekers) perspective. Lehner (2013) advocates the convergence between CF and social entrepreneurship as a process that

can not only provide the necessary funds for the social organizations, but also lead to a higher legitimacy of these through early societal interaction and participation.

Traditionally, government subsidies and private altruistic donations are the main sources of financing for the social sector. Due to the increased number of social organizations and the need of the European countries to reduce their deficits, the social sector has experienced some difficulties in gaining access to traditional private funding (pension funds, private banks, risk capital) when trying to launch their activities. The main reasons are peculiar to the social sector as many financial instruments are not designed for organizations with the aims, size, form of governance and legal status that are intrinsic to the social sector (Guézennec and Malochet 2013). To start with, the aims of social projects are not to maximize return on investment but generally to ensure the capital is repaid. Secondly, the perception of high risk associated with social projects is enough to deter potential investors whose aversion to risk has been significantly reinforced by the financial and economic crisis. Such a perception can be explained by both the very nature of the activities in the social sector, aimed at the most vulnerable and least solvent section of society, and by the ignorance of potential investors concerning the sector. Thus, in the eyes of the classical investor, there is a lack of credibility, a lack of conviction in the projects' viability, and very often a lack of guarantees. The small to medium size of social organizations is another element that constrains access to private funding as initial funding requirements are often considered too costly to be of interest to private investors.

Finally, the legal status of social organizations can also be a deterrent to accessing private funding, as most of the organizations' status excludes the possibility of paying to the investors a rate of return (Guézennec and Malochet 2013).

New ideas that simultaneously meet social needs and create new social relationships or collaborations are needed for social and regional development (MacCallum et al. 2009). Innovations are not only good for society but also they enhance the society's capacity to act (BEPA 2011). These innovations usually happen by trial and error, learning-by-doing, and exchanging ideas within groups where exchange of opinions assists new ways of functioning. The CF platforms for social purposes or social CF combine the latest developments of the digital economy with technologies and finance that could be an innovative response to problems and needs of social entrepreneurs.

Most of the not exclusively social CF projects are based on the lending model in which funds are offered as a loan, with the expectation of some rate of return on capital invested (Schwienbacher and Larralde 2012, Belleflamme et al. 2014). Some social CF efforts, such as those with humanitarian goals, tend to follow a patronage model, placing funders in the position of philanthropists, who expect no direct return for their contributions (OECD 2014). The patronage model is donation-based and it materializes when a crowd-funder (the giver) receives no-rewards for his funding besides altruism, generosity or personal and corporate promotion (Mollick 2014). This model can not only provide the necessary funds for social projects, but may also lead to their higher legitimacy through early societal interaction and participation (Lehner and Nicholls 2014). According to Gajda and Walton (2013), the difference between donation-based CF and traditional fundraising is that social entrepreneurs can use the social CF platform to collect and ear-mark donations for a dedicated project. This could help raise higher amounts per donor, because funders know that their money will be used on a specific project. Such donors also tend to give recurring donations if the social organization keeps them updated about the project's progress. Social CF is most applicable to community-related projects and microfinance to micro development (World Bank 2013).

There are three important topics on the study of CF that are relevant for the present study and the statement of the research questions. One is to investigate the following question: 'how do entrepreneurs that use traditional donations based financing instruments differ in demographic terms from those that use the social CF platforms?' The second is to understand 'what is the

relative impact of social projects characteristics on the alternative forms of donations based financing (traditional vs. social CF)?' The third research topic seeks to examine whether social CF is able to contribute for regional development.

There are different motivations for social entrepreneurs to choose a CF platform for financing their projects (Moritz and Block 2016). The first is obviously to receive funding from the donors to attenuate a particular problem by displaying the main characteristics of the projects and the managerial structural schemes of support (such as a social organization) for efficiency and sustainability (Belleflamme et al. 2014). This is important because it offers the possibility to obtain funds for the project's early-stage financing gap, when traditional funding is not possible. Another motivation could be raising awareness as well as feedback on the project (Bouncken et al. 2015).

Projects with a social or non-profit oriented background have a higher probability of receiving funding from the crowd (Moritz and Block 2016). This relationship has been confirmed both theoretically and empirically (Belleflamme et al. 2013, Belleflamme et al. 2014). According to these authors, the non-profit organizations have a higher credibility in the realization of the project, in contrast to profit-oriented organizations. Also, the characteristics of the entrepreneur influence the chance for a project to be successfully funded, while investors contribute to projects they want to see realized (Belleflamme et al. 2013, Moritz and Block 2016). Therefore, non-profit organizations or socially focused companies are more likely to be supported by investors than others (Bouncken et al. 2015).

Mollick (2014) suggests that geography may play an important role in the success of CF efforts and it has the potential to mitigate many of the distance effects found within traditional fundraising efforts. Therefore, we can consider a home bias effect that could be explained by an emotional and cultural preference for local projects that could attract donors from different regions in a country.

### **Methodology**

On the basis of the literature review, a draft questionnaire was prepared that included the questions judged to have importance in answering the research questions, and pretested on ten experts on the field. The final version of the questionnaire reflected a few modifications suggested by those participants.

Our sampling frame consisted of a random sample of 99 of the 151 Non-governmental organizations (NGOs) listed in the directory of the Portuguese Institute for Development Assistance (IPAD – Instituto Português de Apoio ao Desenvolvimento) that met the criteria of not being managed by religious, political or other business entities. These criteria were introduced in order to ensure that the factors that lead civil society to develop social entrepreneurship initiatives were independently entrepreneurial. To this sample we added all the projects (29) listed on the Portuguese Social Stock Exchange (PSSE). For each selected project an email with a link to the Lime Survey, an open source on-line survey platform, was sent requesting the questionnaire's completion. The platform was active between September 9th, 2012 and January 3rd, 2013. After multiple follow-up emails and phone calls, 68 useable responses were received on 44 NGOs and 24 PSSE projects, resulting in an overall online response rate of 53.1% (44.4% on NGO and 82.8% on PSSE), well above the 33% overall response rate that Nulty (2008) found in 8 studies using online surveys.

Based on the formula for finite population ( $N=128$ ) and assuming the normality of the data distribution (nothing prevented us from accepting that assumption), a level of confidence of 95% and a sampling error of 10%, the size of the sample estimated was  $n=55$  (Malhotra 1999).

In our study we use 68 responses in the empirical analysis, which is considered to be reasonably representative of the total population of NGOs and PSSE projects.

The main aim of this research was to gain deeper knowledge on the use of CF for social purposes and to explore its role on local or regional development. In order to achieve this purpose, we attempt to contrast the main characteristics of the social projects available on the PSSE platform with other social projects funded by other financial mechanisms. Taking into account this general goal, we investigated the nature of the social entrepreneurial venture according to the following series of categorical variables that were introduced into our research model (Table 1).

Table 1

**Variables included in the research model**

| Variable   | Codification used                                      |
|--|--|
| <b>SV's characteristics</b>  |  |
| Type of financial support  | 0- NGOs<br>1- PSSE projects                            |
| Seniority<br>(the length of time the venture has been operating)                 | 0- Otherwise<br>1- ≤ 10 years old                      |
| Geographical location  | 0- Otherwise<br>1- Rural                               |
| Geographical scope   | 0- National or International<br>1- Local or Regional   |
| <b>Audience target</b>   |  |
| Older people   | 0- Otherwise<br>1- The SV deals with this social issue |
| People with physical disabilities and/or special needs                           | 0- Otherwise<br>1- The SV deals with this social issue |
| People from minority ethnic communities  | 0- Otherwise<br>1- The SV deals with this social issue |
| People with particular financial needs   | 0- Otherwise<br>1- The SV deals with this social issue |
| Refugees   | 0- Otherwise<br>1- The SV deals with this social issue |
| People suffering from addictions   | 0- Otherwise<br>1- The SV deals with this social issue |
| Socially excluded/vulnerable people  | 0- Otherwise<br>1- The SV deals with this social issue |
| Local organizations and associations   | 0- Otherwise<br>1- The SV deals with this social issue |
| <b>Aims</b>  |  |
| To complement services supplied by the markets                                   | 0- Otherwise<br>1- Yes                                 |
| To complement services supplied by the public sector                             | 0- Otherwise<br>1- Yes                                 |
| To compete with other providers  | 0- Otherwise<br>1- Yes                                 |
| To compete with the public sector  | 0- Otherwise<br>1- Yes                                 |
| To perform an activity that is not provided by the public or the private sectors | 0- Otherwise<br>1- Yes                                 |

Source: authors' own survey

Thus, through the empirical work we aimed to evaluate the impact of the SV's characteristics in the decision to use a social CF platform, specifically the length of time the venture has been operating (seniority), geographical location, geographical scope, target audience and aim of the activities developed.

For the statistical analysis of data, we used the chi-square test, a non-parametric test which allows us to evaluate the extent to which two pairs of variables are independent or not (Field 2005). Taking into account the sample size, we used the likelihood ratio in the implementation of this statistical inference tests (Field 2005). Furthermore, we also aimed to measure the strength of the association observed between the variables. For that purpose, Cramer's V statistic was used (Field 2005). Then, based on chi-square approximation, we computed the Goodman and Kruskal  $\lambda$ , in order to measure the extent to which the membership of a category of one variable is able to predict the membership category presented in the other variable. Finally, to make the data analysis more complete and comprehensive, based on the contingency tables previously built, we computed the odds ratio to measure the extent to which the presence of some characteristics of the project is able to foster the use of social CF in Portugal or not.

### **Results and Discussion**

Referring to the descriptive characteristics of the sample, about half of the responses obtained (48.9%) were completed by the head of the organization and the remainders were fairly evenly distributed between directors, board members, technicians or others. Around half of them (51.1%) worked as volunteers, wherein this percentage was higher in the NGOs case (62.5%) than in PSSE projects (23.1%).

Concerning the SV's characteristics, we observe that most of PSSE projects were 10 or more years old (62.5%), followed by ventures aged between 3 and 10 years (29.2%). Most of NGOs, in turn, were aged between 3 and 10 years old (56.8%), and only a small proportion were also less than 3 years old (6.8%). These results could be justified by the time required by organizations for being aware of the benefits of using social CF platforms and by the time required for taking the necessary steps to access the PSSE.

Both PSSE projects and NGOs were mainly located in the greater Lisbon area (58.3% and 50.0%, respectively). The other PSSE projects were geographically distributed by the Portuguese territory (Table 2). Two of them had a simultaneous presence in various geographical locations (8.3%) and nine (13.2%) were located in the interior of the country. Most of the projects listed on PSSE had a national (41.7%) and local scope (29.2%), the case of projects acting in international (12.5%) or regional levels (16.7%) being less frequent. NGOs, in turn, worked mainly at an international (77.3%) or national level (13.6%), and only a small percentage referred to act regionally (6.8%) or locally (2.3%).

We observe that social entrepreneurial ventures cover a wide range of social areas. The most common within PSSE projects are those that dealt with socially excluded and/or vulnerable people (37.5%), people with physical disabilities or special needs (29.2%), elderly people (20.8%) or with people with financial needs (20.8%). Several PSSE projects preferred to work with other target audiences, such as children (6), young people (2), the whole population (2), potential entrepreneurs (1) and AIDS/HIV infected (1). NGOs also dealt with a great diversity of social issues, where the most frequent were the socially excluded people (47.7%), the people with financial needs (38.6%), other organizations or associations (38.6%) and the elderly people (25.0%).

Table 2

## General characteristics of the sample

| Characteristics  | PSSE projects |       | NGOs   |       | Total  |       |
|--|---------------|-------|--------|-------|--------|-------|
|  | N (24)        | %     | N (44) | %     | N (68) | %     |
| <b>Age</b>   |               |       |        |       |        |       |
| 1-3 years  | 2             | 8.3%  | 3      | 6.8%  | 5      | 7.4%  |
| 3-10 years   | 7             | 29.2% | 25     | 56.8% | 32     | 47.1% |
| >10 years  | 15            | 62.5% | 16     | 36.4% | 31     | 45.6% |
| <b>Geographical location</b>   |               |       |        |       |        |       |
| North  | 2             | 8.3%  | 8      | 18.2% | 10     | 14.7% |
| Center   | 2             | 8.3%  | 8      | 18.2% | 10     | 14.7% |
| Lisbon   | 14            | 58.3% | 22     | 50.0% | 36     | 52.9% |
| Alentejo   | 3             | 12.5% | 2      | 4.5%  | 5      | 7.4%  |
| Algarve  | 0             | 0.0%  | 1      | 2.3%  | 1      | 1.5%  |
| Islands  | 1             | 4.2%  | 0      | 0.0%  | 1      | 1.5%  |
| Various  | 2             | 8.3%  | 3      | 6.8%  | 5      | 7.4%  |
| <b>Geographical scope</b>  |               |       |        |       |        |       |
| Local  | 7             | 29.2% | 1      | 2.3%  | 8      | 11.8% |
| Regional   | 4             | 16.7% | 3      | 6.8%  | 7      | 10.3% |
| National   | 10            | 41.7% | 6      | 13.6% | 16     | 23.5% |
| International  | 3             | 12.5% | 34     | 77.3% | 37     | 54.4% |
| <b>Target audience</b>   |               |       |        |       |        |       |
| Older people   | 5             | 20.8% | 11     | 25.0% | 16     | 23.5% |
| People with physical disabilities and/or special needs                           | 7             | 29.2% | 4      | 9.1%  | 11     | 16.2% |
| People from minority ethnic communities  | 4             | 16.7% | 9      | 20.5% | 13     | 19.1% |
| People with particular financial needs   | 5             | 20.8% | 17     | 38.6% | 22     | 32.4% |
| Refugees   | 0             | 0.0%  | 6      | 13.6% | 6      | 8.8%  |
| People suffering from addictions   | 2             | 8.3%  | 2      | 4.5%  | 4      | 5.9%  |
| Socially excluded/vulnerable people  | 9             | 37.5% | 21     | 47.7% | 30     | 44.1% |
| Local organizations and associations   | 4             | 16.7% | 17     | 38.6% | 21     | 30.9% |
| Others   | 11            | 45.8% | 22     | 50.0% | 33     | 48.5% |
| <b>Aims</b>  |               |       |        |       |        |       |
| To complement services supplied by the markets                                   | 10            | 41.7% | 11     | 25.0% | 21     | 30.9% |
| To complement services supplied by the public sector                             | 12            | 50.0% | 21     | 47.7% | 33     | 48.5% |
| To compete with other providers  | 3             | 12.5% | 4      | 9.1%  | 7      | 10.3% |
| To compete with the public sector  | 0             | 0.0%  | 2      | 4.5%  | 2      | 2.9%  |
| To perform an activity that is not provided by the public or the private sectors | 6             | 25.0% | 16     | 36.4% | 22     | 32.4% |

Source: authors' own survey

It should be noted that social entrepreneurship ventures tend to focus their activity on a limited number of social issues, whereas PSSE projects worked, on average, in two of the inquired social areas (average of 1.95) and NGOs between two and three categories (average of 2.4).

With respect to the developed activities, we observe that in most cases both PSSE projects and NGOs complemented the services offered by the State (50.0% and 47.7%, respectively) or by the private sector (41.7% and 25.0%, correspondingly), whereas it is not frequent that they compete with other providers (this occurs in only 12.5% and 13.6% of the cases, respectively). Furthermore, about a quarter of the projects present in PSSE operate in areas that were not being addressed neither by the services offered by the State nor by the private sector (25.0%), being the same verified in more than a third of NGOs (36.4%).

Following the general characteristics of the sample, we proceed to a comparative study of the PSSE projects and NGOs characteristics, in order to assess the extent to which the different features are able to explain why some SVs use social CF platforms, while others only rely on traditional based financing.

The data analysis reveals that SV's seniority degree and the use of the social CF platforms are not independent variables ( $\chi^2(1) = 4.3$ ;  $p = 0.038$ ). Although the capacity to predict if a SV access to PSSE according to its seniority is only about 6.3% (Goodman and Kruskal  $\lambda = 0.063$ ,  $p = 0.040$ ), we observe a moderate association between both variables (Cramer's  $V = 0.251$ ,  $p = 0.039$ ). The analysis of the odds ratio suggests that more recent ventures are 2.9 times more likely to access PSSE than those aged over 10 years. This result could be explained for two reasons: first of all, because social CF is a recent phenomenon and the presence of PSSE is quite recent; secondly, younger ventures are often faced with increased difficulties in accessing financial resources, which could encourage them to be more active in finding new and alternative financing sources.

The statistical results indicate that there is also a significant association between the geographical location and the used model of financing ( $\chi^2(1) = 4.257$ ;  $p = 0.038$ ; Cramer's  $V = 0.256$ ,  $p = 0.034$ ) (Table 3). The results suggest that the SV's location is able to predict the use of social CF platforms in a percentage similar to its seniority (Goodman and Kruskal  $\lambda = 0.066$ ,  $p = 0.063$ ). Social projects located in rural and interior areas are 4,556 times more likely to be listed on PSSE than projects located on urban or coastal areas, as suggested by the odds ratio. This finding could be justified by the increasingly financial difficulties of SVs located in less favored regions that require a more proactive attitude from promoters in order to find alternative sources of financing. So, according to the empirical evidence gathered, we could accept the possibility of SVs located in the rural areas being more prone to access social CF.

We also observe that the use of PSSE is conditioned by the geographical scope of the SV ( $\chi^2(1) = 11.848$ ;  $p = 0.001$ ). The fact that the social venture act at a local or regional level is strongly associated with the possibility to use social CF (Cramer's  $V = 0.423$ ,  $p < 0.001$ ) and the consideration of this variable is able to reduce by about 11.9% the probability of error of forecasting if an initiative is or not listed on PSSE (Goodman and Kruskal  $\lambda = 0.179$ ,  $p = 0.001$ ). Our empirical data suggest that local and regional SV are much more likely to use PSSE than those ventures which act at national or international levels (odds ratio = 8.5).

The greatest propensity of these SVs to use social CF platforms could be explained by the socio-economic characteristics of the local population they aim to address, which could have scarce resources to support the venture's social mission. The financial constraints experienced by the local population seem requiring SV to get support from a broader audience, expecting that Portuguese citizens interested in contributing to relevant social causes could help financing these projects. Additionally, the 'localized' appeal maybe also abler to capture philanthropic attitudes, related to the affective relationship with the territories and their social structures, as

Table 3

## SV's characteristics and financing mechanisms used

| Variables  | Likelihood Ratio |                | Goodman and Kruskal $\lambda$ |          | Cramer's V |          | Odds ratio |
|--|------------------|----------------|-------------------------------|----------|------------|----------|------------|
|  | Value            | Sig. (2 sided) | Value                         | Sig.     | Value      | Sig.     |            |
| Social Projects with less than 10 years vs. more than 10 years (Seniority) | 4.300            | 0.038**        | 0.063                         | 0.040**  | 0.251      | 0.039**  | 2.917      |
| Rural vs. urban social projects (Geographical location)                    | 4.257            | 0.039**        | 0.066                         | 0.063*   | 0.256      | 0.034**  | 4,556      |
| Local / regional vs. national / international focus (Geographical scope)   | 11.848           | 0.001***       | 0.179                         | 0.001*** | 0.423      | 0.000*** | 8.462      |

\*\*\*The result is statistically significant, for  $\alpha=0.01$ ;

\*\*The result is statistically significant, for  $\alpha=0.05$ ;

\*The result is statistically significant, for  $\alpha=0.10$ ;

Source: authors' own survey

mentioned in the review of literature. NGOs, in turn, due to their size and international action (particularly within developing countries) could possibly have access to other kind of incentive programs, which makes the search of new financing sources not so pressing and, on the other side, eventually, they are less able to make appeal to donors based on affective links. This result is consistent with the positive relationship verified between the rural social projects and the use of PSSE, and it generally supports the argument that CF does seem to be an instrument endowed with regional development potential, when dealing with socially oriented projects. Indeed, the CF as an instrument to finance small social projects could be a source of employment creation and regional economic diversification in less developed areas. Furthermore, the talents and energy of social entrepreneurs are expected to emerge as CF attracts funds that could have a positive impact on their lives and the lives of peoples' community.

Regarding to the social issue addressed, our analyses shows that in the majority of cases no relationship is observed between the venture's target audience and the kind of social entrepreneurial activity pursued (Table 4). The exceptions are observed in organizations that deal with people with physical disabilities and/or special needs ( $\chi^2(1)= 4.409$ ;  $p= 0.036$ ; Cramer's  $V=0.261$ ,  $p=0.032$ ), refugees ( $\chi^2(1)= 5.536$ ;  $p= 0.019$ ; Cramer's  $V=0.230$ ,  $p=0.058$ ) and with local organizations and associations ( $\chi^2(1)= 3.738$ ;  $p= 0.053$ ; Cramer's  $V=0.227$ ,  $p=0.006$ ).

We found that organizations that dealt with people with physical disabilities and/or special needs were about 4.12 times more prone to use PSSE than the other ones, and this fact predicts the membership of the venture in the social CF platform by approximately 7% (Goodman and Kruskal  $\lambda= 0.068$ ). The development of activities in this social area could require an additional investment in infrastructure and equipment suitable to the features of the public they intent to serve. Due to the fact they are more capital intensive, they have a

particular need for obtaining the required financial resources and, therefore, they are more prone to apply to PSSE.

On the other hand, our results suggest that SVs that used to work with refugees were less likely to access social CF. In fact, none of the PSSE projects dealt with this issue (which result

Table 4

**SV's target audience and mechanisms of financing**

| Variables  | Likelihood Ratio |                       | Goodman and Kruskal $\lambda$ |              | Cramer's V |              | Odds ratio |
|--|------------------|-----------------------|-------------------------------|--------------|------------|--------------|------------|
|  | Value            | Asymp. Sig. (2 sided) | Value                         | Approx. Sig. | Value      | Approx. Sig. |            |
| Older people   | 0.152            | 0.697                 | 0.002                         | 0.701        | 0.047      | 0.699        | 0.790      |
| People with physical disabilities and/or special needs | 4.409            | 0.036**               | 0.068                         | 0.033**      | 0.261      | 0.032**      | 4.118      |
| People from minority ethnic communities                | 0.146            | 0.702                 | 0.002                         | 0.706        | 0.046      | 0.704        | 0.778      |
| People with particular financial needs                 | 2.344            | 0.178                 | 0.033                         | 0.137        | 0.182      | 0.134        | 0.418      |
| Refugees   | 5.536            | 0.019**               | 0.053                         | 0.060*       | 0.230      | 0.058*       | 0.000      |
| People suffering from addictions                       | 0.386            | 0.610                 | 0.006                         | 0.529        | 0.077      | 0.526        | 1.909      |
| Socially excluded/vulnerable people                    | 0.664            | 0.415                 | 0.010                         | 0.420        | 0.098      | 0.417        | 0.657      |
| Local organizations and associations                   | 3.738            | 0.053*                | 0.052                         | 0.063*       | 0.227      | 0.061*       | 0.318      |
| Others   | 0.108            | 0.742                 | 0.002                         | 0.744        | 0.040      | 0.743        | 0.846      |

\*\*\*The result is statistically significant, for  $\alpha=0.01$ ;

\*\*The result is statistically significant, for  $\alpha=0.05$ ;

\*The result is statistically significant, for  $\alpha=0.10$ ;

Source: authors' own survey

in an odds ratio=0). Acting on this social problem, reversely, was more common within NGOs, which could be explained by the international cooperation needed to cope with this kind of issue.

Even with respect to the target audience, we observe that PSSE were less likely to deal with other local organizations and associations than NGOs (odds ratio=0.318). In other words, we have observed that social projects present in PSSE had a greater propensity to work directly with the individuals or families which were affected by a social problem than NGOs (3.15 times more likely). Thus, we can conclude that NGOs tended to be marginally more concerned with the intervention built through actions developed towards other organizations. This could mean that SVs that have a more national or international scope tend to act upon other organizations (of a local nature) in order to implement the response model they had conceived. Thus, their intervention involves the capacity of building and empowering the local communities, as a way of spreading and optimizing the social impact they jointly are able to achieve.

One the other hand, PSSE projects which act mainly in a local or regional way (as previously mentioned), are more predisposed to work directly with the individuals they intend to serve.

This result could be justified by the proximity observed between them (SV and final target audience), which is seen as a critical factor to identify and evaluate the problems and to improve efficiency in the actions taken. Once again, physical and affective proximity looks to be a moving factor behind those social initiatives. That is something that boosts their potential and, simultaneously, catalyzes the power for social change.

With respect to the aims of the activity provided by the SVs, our results suggest that the level of complementarity or competition with the services provided by other entities (public or private sectors) are not able to explain the access (or not) to the social CF platform (Table 5). By analyzing the odds ratio, we observe that it is far more likely that NGOs compete with the work developed by the State than PSSE projects (it should be highlighted that none of the PSSE projects dealt with social problems already addressed by the public initiative). This result, although it lacks statistical significance, could indicate that PSSE projects which have a more local action have a deeper understanding and awareness of the actual needs of its target audience and the extent to which these needs were (or not) being adequately addressed by the

Table 5

**SV's activity aims and financing mechanisms used**

| Variables  | Likelihood Ratio |                | Goodman and Kruskal $\lambda$ |       | Cramer V |       | Odds ratio |
|--|------------------|----------------|-------------------------------|-------|----------|-------|------------|
|  | Value            | Sig. (2 sided) | Value                         | Sig.  | Value    | Sig.  |            |
| To complement services supplied by the markets                                   | 1.982            | 0.159          | 0.030                         | 0.158 | 0.172    | 0.155 | 2.143      |
| To complement services supplied by the public sector                             | 0.032            | 0.858          | 0.000                         | 0.859 | 0.022    | 0.858 | 1.095      |
| To compete with other providers  | 0.191            | 0.662          | 0.003                         | 0.661 | 0.054    | 0.658 | 1.429      |
| To compete with the public sector  | 1.774            | 0.183          | 0.017                         | 0.293 | 0.129    | 0.289 | 0          |
| To perform an activity that is not provided by the public or the private sectors | 0.938            | 0.333          | 0.013                         | 0.342 | 0.116    | 0.338 | 0.583      |

\*\*\*The result is statistically significant, for  $\alpha=0.01$ ;

\*\*The result is statistically significant, for  $\alpha=0.05$ ;

\*The result is statistically significant, for  $\alpha=0.10$ ;

Source: authors' own survey

existing social responses. Thus, the results attained suggest that the SV's characteristics have a greater influence on the funding decision rather than in the interaction established with other potential service providers.

The international action of NGOs, in turn, could result in a greater difficulty in adjusting the intervention built to the answers already existing at the different spheres and, therefore, could turn to some overlapping in the activities developed.

**Conclusion**

The main goal of our research was to broaden the knowledge basis of social CF for local and regional development, addressing its potential as a new instrument of regional policy. This was empirically approached through the examination of the main characteristics of the social

projects available on the Portuguese Social Stock Exchange platform. Our objective is to be able of making practical contributions for social entrepreneurs, managers of similar platforms and policy makers, and, lastly, to explore the potential contribution of CF to regional development.

The study emphasizes that social change can be accomplished by including CF as an alternative source of financing social projects. This decision might be able to promote local economic revitalization by launching new services for disadvantaged communities. In times of crisis such as the one some countries (including Portugal) are living, resources (human, financial, physical) are critical for sustaining social organizations. The State can hardly make a major contribution to support social ventures, even if they take place in peripheral territories. In these circumstances, an innovative financial instrument like CF can play a role, both, as a way of gathering resources to social entrepreneurs, and as a net contributor to regional development.

The potential of CF is closely related to philanthropic concerns in struggling to solve social problems and in the affective relationship kept by certain internal and external agents towards their places of origin or the one of their ancestors and relatives. Exploring this affective link is surely rewarding, as seen from time to time when people are confronted with certain natural disasters or other adverse circumstances.

The study found that more recent SVs are more likely to access PSSE than those aged over 10 years, which is not surprising since social CF is a recent phenomenon and the existence of PSSE is also quite novel. The empirical data suggest that rural SVs are much more likely to use PSSE than those ventures located in urban areas. Furthermore, statistical results indicate that local and regional SVs are also more likely to use PSSE than those ventures which act at national or international levels, suggesting that there is a significant association between the geographical location and the financial mechanism pursued. Also, it is worth mentioning that, in most cases, both PSSE projects and Non-Governmental Organizations complemented the services offered by the State or by the private sector. Further, about a quarter of the projects present in the PSSE operated in areas that were not being addressed neither by the services offered by the State nor by the ones of the private sector.

The propensity of social entrepreneurs to use CF may have its explanation on the socio-economic characteristics of the local community they aim to reach. A possible reason for that can be related with the efficacy of appealing to philanthropic attitudes when we are dealing with 'localized' social projects due to their capacity to get the affinity of people based on close relationships with territories, inside and outside the region, taken by them as their mother land or the one of their relatives. An alternative explanation may be the access that NGOs have, due to their links and scope of action, to other kind of incentive programs, which makes the search of new financing sources not so demanding. In summary, a positive relationship does seem to verify between local and regional social initiatives and the use of CF as an instrument to promote social change in local communities.

Based on our results, it seems there is place for managers to systematically design and implement potential improvements into their social CF platforms in order to attract the crowd to invest in social projects. On the other hand, social entrepreneurs do seem to have the chance to capture a considerable amount of financial resources to develop SVs by improving the awareness of the social problems and the projects that are designed to improve the quality of life of the residents. Likewise, social entrepreneurs must target particular agents outside the territory in order to maintain an affective relationship with the local communities and their residents.

As underlined by the more recent theoretical frameworks on regional development, not everything is explained on the basis of resources endowment. Knowing that, the search for solutions to social and territorial problems has to rely on innovative instruments and agents of change. Entrepreneurship (social or not) is, surely, an essential key of the regional development process. In this regard, policy makers can play a strategic role in fostering social entrepreneurship by functioning as catalysts in simplifying the legislative environment and to develop policy initiatives (advice, technical training, information on several issues related to the launching of social entrepreneurs, etc.) that support the accomplishment of social organizations' mission. If CF can be a valuable source of regional funding to attack a few of the problems felt by certain communities and territories, social entrepreneurs should explore its potential, and public authorities should, at least, look to donors as people deserving special recognition by its philanthropic role.

The study paper suffers from several limitations that might inhibit the generalization of the results to social entrepreneurs operating under different conditions. First, all the social entrepreneurs participating in the study are Portuguese, operating in the same domestic environment and online platform (PSSE). Thus, findings may not be directly applicable to social entrepreneurs operating in other domestic or foreign platforms and other countries. Second, the codification scheme used to classify the variables of SV's characteristics, audience target and aims was based on a dichotomous and not an interval scale which prevented us of using more advanced statistical techniques. Third, the study focused on a number of factors that need further analysis. The use of supplementary qualitative methods can uncover greater depth of insights of the social entrepreneur's regional orientation, and improve our understanding about the strategies used both by the managers of the CF platform and by crowdfunders and crowdfundees. Future research could include the study of other online platforms dedicated to finance social projects in order to validate the conclusions attained in the PSSE case. Also, the motivations of crowdfunders and crowdfundees to be engaged in the social projects listed within the CF platforms could enhance our understanding of the phenomenon.

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## IMPACT OF THE LOCATIONS OF SMALL TOWNS IN MAZOVIA (POLAND) ON THEIR SOCIO-ECONOMIC STRUCTURE AND ON THEIR ROLE IN RELATION TO THE NEIGHBORING RURAL AREAS

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**Abstract:** This paper centers on the smallest towns (with populations below 10 000 inhabitants) in Mazovia region, Poland. What is mainly involved in the paper is an indicating of differences or regularities characterising the functional structures of small towns, and the roles they play in respect of the surrounding areas – in relation to their geographical location. The subjects of the detailed study were 10 localities in Mazovia: Serock, Radzymin, Ożarów Mazowiecki, Piława and Skaryszew – all located in the vicinity of a large agglomeration; and Łosice, Różan, Przysucha, Lipsko and Chorzele, in peripheral locations. Small peripheral towns have much more important functions to supply to the rural areas surrounding them than the agglomerated towns. Unfortunately, they are losing internal potential and they are characterised by unfavourable demographic processes. In turn, the small towns located within the wider surroundings of the agglomerations have been experiencing population growth.

**Key Words:** *small towns, Mazovia, Poland, socio-economic structure, agglomeration, peripheries.*

### Introduction

Small towns represent an important element of the spatial and functional structure in each country. In Poland, they represent more than 70% of all urban areas and comprise roughly 20% of the population. Growth in the number of studies about small towns, particularly in geography discipline, is not therefore surprising. The main axis of research on small towns relates to demographic issues, the quality of life, and economic development. However, the bulk of the research centres on the functional structure of small centres, and the relationship between them and the surrounding rural areas (Elsasser 1998, Courtney and Errington 2000, Hinderink and Titus 2002, Duranton and Puga 2005, Heffner 2005, Rydza 2006). Studies indicate that small towns are local development centers, which focus on administrative, services and trade functions used by the inhabitants of the surrounding countryside.

Generally, the identification of the main functions of small towns is based on the analysis of the dominant sectors of the economy, or – more broadly – the role of the different socio-economic domains in the town's development. The studies of the functional structure of Polish towns by Jerczyński (1977) represent an example of the first type of research. Jerczyński (1977) distinguished ten functional types of towns by analysing employment in the three main sectors of the economy. At that time, the prevailing types were: industrial, industrial-services, as well as services-industrial. A great number of industrial towns resulted from the post-war policy of industrialisation and urban development based on industrial investment. Kachniarz (1987) divided towns of less than 20 000 inhabitants into 23 groups that varied in terms of functional structure, administrative status and number of residents. He argued that those small towns and municipal centres would primarily deliver services to the local population and to agriculture, as well as developing light industry and crafts. However, later studies carried out by Szymańska

and Grzelak-Kostulska (2005) failed to confirm this scenario, revealing that – since the transformation – the number of small towns performing service functions had increased, especially in central areas (Lamprecht 2008), to the detriment of industrial and agricultural towns.

The transformation has also affected the economic structure of small towns, notably in terms of numbers and types of new private enterprises that have flourished. Adopting the example of small towns in the Silesia region, Zuzanska-Zyško (2005) argued that the 1990s brought a major increase in the number of new enterprises servicing agricultural areas, while the rate of growth characterising these in specialised towns (e.g. in mining, or with a tourist function) was much weaker. As recently as in 1999, roughly half of the population of small towns in Silesia was employed in manufacturing, trade and repair, and in mining (Zuzanska-Zyško 2005). However, by 2005, employment in services in the small towns of the Silesia and Wielkopolska regions had grown to 28% (Konecka-Szydłowska et al. 2010).

The functional specialisation of small towns was also explored using principal component and discriminant analysis based on variables relating to social, economic and demographic features (Lin 1993). This was further investigated in two categories of small towns in China, with regard to their status and administrative position. The study of Welsh small and market towns revealed that their function as local poles of employment varies with regard to their location (Woods et al. 2007). Small towns that are significant administrative centres in more remote locations have the highest ratios of jobs to working residents, whereas the lowest ratios correspond to the small towns close to other larger urban localities. In line with functions, services offered and employment opportunities, six ideal-type models of small and market towns were distinguished: sub-regional centres (discharging higher-order service functions to the benefit of extensive rural areas), anchor towns (providing commercial, social and administrative functions in respect of a rural district), island towns (located close to larger urban centres but capable of maintaining their independence in terms of employment and services), doughnut towns (with quite a strong hinterland providing additional services and employment), satellite towns (close to larger urban centres and dependent on them) and niche towns (creating new and specialised attractions to take the place of previous functions that had declined).

By considering economic structure and level of independence vis-à-vis the large city of Izmir (Turkey), four functional types of small satellite towns were identified: towns with a predominance of the residential function (located under the immediate influence of a metropolis); towns producing for the main city; towns that are quite independent and 'image bearing' (as tourist centres); and rural centres maintaining an intermediate position between rural areas and the metropolis (Montabone 2013). However, despite these nuances, all the small towns remained under a certain influence of Izmir, while also contributing to its development.

In the case of the Kaluga region (Russia), the functions of small towns were explored in the light of their locations, and on the basis of quantitative data and information obtained in interviews with experts (Savoskul et al. 2014). The authors argued that a location in close proximity to Moscow enables permits of industrial or recreational functions to develop in small towns. On the other hand, a location on the fringes of the region, in only poor connection with the capital city ensures stagnation, and hence the retention of historically developed industrial and transport functions, given the lack of new impulses for a change of structure. Finally, the small towns that were once centres serving agriculture had lost their key function due to the crisis in that sector, commencing instead with the provision of at best simple administrative and urban functions.

In line with locations in the Moravian region (Czech Republic), Vaishar and Zapletalová (2009) distinguished three sub-types of small town: (1) in the hinterlands of large cities, (2) in lowlands

with good accessibility to larger cities and (3) on the periphery. In line with their specific locations, small towns in the vicinity of large cities are seen to lose their central functions, those well connected with other urban centres strive to specialise as regards functions, while those located in distant areas become centres of their hinterland. Moreover, the population growth is greater in suburbanised small towns than in those located in more distant areas, while the set of functions served is also a function of the size of the small town (Vaishar et al. 2015).

A number of studies have focused on case-study towns and the evolution of their functions over time, also providing interesting evidence in this way. Small towns in the vicinity of larger urban centres may attempt to preserve their identity and apply smart growth goals. The example of Davidson (United States) shows that the development of retailing and services for residents and of industrial jobs that benefit the entire region can combine with the elaboration of innovative tools by which to manage local growth to support dynamic local development successfully (Lambe 2008). Indeed, employment in industry and construction still plays a key role in small satellite towns in Poland or France, despite the growing number of economic units that operate in services (Kwiatek-Sołtys et al. 2014). Such a functional structure still produces positive side effects, e.g. the development of cooperating companies in different domains. Moreover, where the economies of small towns are concerned, it is often more beneficial to host companies (e.g. in industry) occupying larger plots, given the higher revenues ensuing through the property taxes paid by companies. On the other hand, the small town of Farmville (United States) that was previously the centre of the national tobacco industry managed to diversify its economy after the traditional industry declined (Lambe 2008). First, a local strategy based on cooperation between public and private sector leaders entailed strong support being given to existing businesses, which created more than 80% of the new jobs and were responsible for a majority of the new investment. Second, Farmville focused on an intensive branding and marketing campaign to attract new residents and businesses. Finally, a pro-growth coalition created by local government became a key player in the development of Chengguan Zhen county (China), integrating the interests of government officials, state-run work-units and developers (Han 2010).

These few examples illustrate that, although the role of small towns depends to a certain extent on their position with regard to larger cities (ESPON 2006), an accurately conceived local strategy may result in positive changes of position in the local functional structure. Unfortunately, in recent years in Poland, the regional development policy focuses on metropolitan areas and big cities. In contrast, small towns are regarded rather as marginal issues. However, polycentric development, which is one of the paradigms of the current regional development policy, should take into account all elements of the settlement structure. For example, in the region of Mazovia, a medium-sized and smaller cities come together to form a relatively evenly distributed network of cities. This kind of spatial distribution may contribute to the gradual development of these cities, as the entirety performs a variety of local functions and even supra-local functions in some parts of the region where there are located "weak" subregional centres (Bański and Czapiewski 2015).

Although previous findings underlined how location in regard to a large city is crucial in shaping the functional structure of small towns, other groups of factors have also been identified. Satterthwaite and Tacoli (2003), for example, argued that small urban centres support regional development in four ways: as centres of demand for agricultural production, as centres for production and the distribution of goods to surrounding rural areas, as local job centres and as places attracting rural migration. They suggested that these roles are dependent on the specific context in which the town is located, and thus in regard to: land-owning structures, the quality of transport and communications and structural conditions at the international, national and local levels (Satterthwaite and Tacoli 2003). On the other hand, Lamprecht (2008) claimed that the functional transformation touching industrial sites in small towns is a function of former land use, accessibility (both in terms of transport and regulated land ownership) and the subjective

value of the land.

Notwithstanding the various findings detailed above, the work detailed in this paper has sought to analyse the functional structure of small towns, through an exploration of the way in which territorial context affects that structure. What is mainly involved here is an indicating of differences or regularities characterising the functional structures of small towns, and the roles they play in respect of the surrounding areas – in relation to their geographical location.

Small towns and rural areas in Poland have undergone significant changes since 1989. First, suburban areas of major cities have experienced rapid economic development (Bański 2009). Second, financial support from the European Union funds has resulted in improved technical and transport infrastructure in rural areas. Third, a number of new investments have occurred in the wake of the near-instant collapse of the State Farms. Fourth, such features as civic society and social and economic activity have gathered strength among the inhabitants of both urban and rural areas.

In fact, the above are only selected examples of changes resulting from the transformation in Poland. They also had an impact in shaping new functions in the towns of the Mazowieckie (Mazovia) province-region or voivodeship. Thus, the second goal of the work presented in this paper has been to provide evidence on the directions of changes in the functional structure of selected towns in the voivodeship over the past three decades. We have thus sought to address a question regarding post -1989 changes in the functional structure of small towns as this relates to their location.

### **Methodology**

Mazovia is a classic example of a highly polarised region given the presence of the principal urban centre (Bański and Czapiewski 2015). Warsaw far outweighs other cities in terms of socio-economic functions and demographic potential. The social, economic and cultural pressure exerted by the Warsaw agglomeration is manifested by signs of implosion and it weakens the opportunities for development in the other towns. An example of this phenomenon is provided by the stagnation or regression of demographic sub-regional cities (Radom, Płock, Siedlce, Ciechanów and Ostrołęka). Moreover, due to the last administrative reform, the sub-centres lost their status as capitals of voivodeships; and this also affected their positions negatively. This urban network is complemented by district towns and other, generally-smaller centres.

Among 86 urban localities within the Mazowieckie voivodeship, three of them are classified as major cities (Warszawa, Radom and Płock), 22 as medium-sized cities, and 61 as small towns. This paper is focused on the smallest 37 towns which belong to the latter group, each with a population size of less than 10 000 inhabitants (Table 1).

The smallest towns (with populations below 10 000 inhabitants) are not distributed evenly, but they are rather concentrated in the central part of the region, with the fewest on Warsaw's northern outskirts, and in a wide zone between the capital and Radom. In the communist period, the industrial function was of relatively major importance in the small towns. However, from the very beginning of the transformation, the number of jobs in industry declined dramatically. Figures for the percentages of enterprises operating in industry and construction fell in almost all small towns, and Mazovia proved to be no exception to that trend. The most major losses concerned the smallest centres, making a major contribution to economic regression among the latter. Today, the structure characterising employment in small towns is dominated by non-market services together with industry and market services. The greater importance of non-market services is mainly found in towns located at greater distances from

the major urban centres. This is confirmed by an analysis of the participation of economic entities operating in industry and construction.

Table 1

**Size structure characterising towns and cities in the Mazovia region (2015)**

| Size class (people) | Number of towns/cities | Population | Area (km <sup>2</sup> ) |
|---------------------|------------------------|------------|-------------------------|
| More than 100,000   | 3                      | 2,068,955  | 717                     |
| 50–100,000          | 4                      | 240,431    | 94                      |
| 20–50,000           | 18                     | 542,718    | 385                     |
| 10–20,000           | 24                     | 349,473    | 497                     |
| 5–10,000            | 10                     | 104,190    | 124                     |
| less than 5,000     | 27                     | 80,005     | 348                     |

Source: Central Statistical Office, Poland.

The subjects of the detailed study were two types of localities – central and peripheral. Peripherality is a very general phenomenon and despite many attempts to simplify its definition, it is not possible to cover all its dimensions by a single indicator. When reflecting on a wide range of scientific papers focused on peripherality (Leimgruber 1994, Schmidt 1998, Málíková and Spišiak 2013), it is possible to distinguish two main groups of approaches to the research of this phenomenon: the objective and the subjective dimension.

Using measures of spatial accessibility, distance and population density, Novotny et al. (2015) designated core and peripheral areas. To make the resulting values of different indices comparable, they were classified into four peripheral zones of different intensity of "peripherality", from A to D, and one as non-peripheral zone. Zone A has been defined as the area with the most significant values of a given index associated with peripheral areas. Using this division in our studies for detailed analyses (Fig. 1), there were selected five small cities in the vicinity of large agglomeration (Serock, Radzymin, Ożarów Mazowiecki, Piława and Skaryszew) and five small towns located in the peripheries (Łosice, Różan, Przysucha, Lipsko and Chorzele).

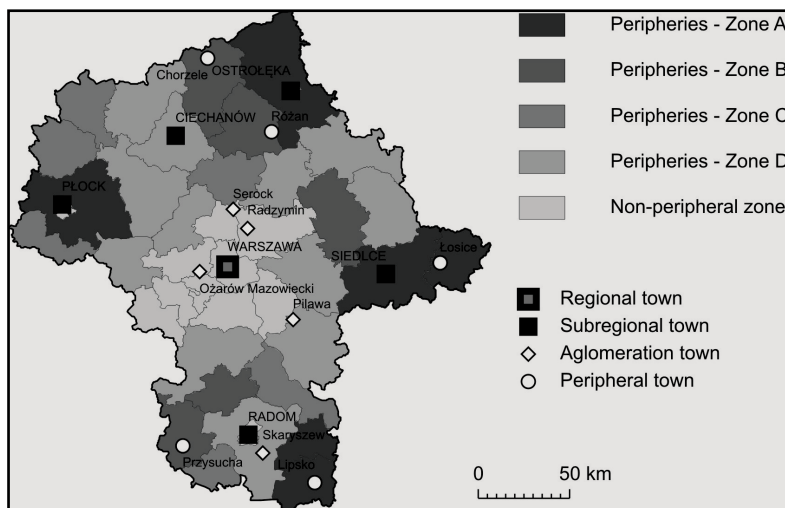


Fig. 1 – Level of peripherality and location of small towns selected for detailed study  
Source: own research

Statistical analysis is based on data from the Central Statistical Office and the research conducted within the project *Polycentric development of Mazovia region* for the Mazovian Office for Regional Planning. Some conclusions are the results of the interpretation of social investigations (interviews and questionnaires) made in this project.

### Results and Discussion

The two groups of town analysed – dubbed agglomerated and peripheral for convenience – are rather small in terms of population size (Table 2). Each is the main centre of a *gmina* (local-authority area) assigned to the rural-urban category<sup>1)</sup>. Beyond that, Łosice, Lipsko and Przysucha are all centres of administration at the next (county) level of the *powiat*<sup>2)</sup>. Four of the agglomerated towns (Pilawa, Serock, Radzymin and Ożarów Mazowiecki) are in the immediate vicinity of the capital of region and state alike, i.e. Warsaw. For its part, Skaryszew is close to the important sub-regional centre of Radom. In contrast, the peripheral towns are located on the borders of the region, in places where the impact of Warsaw and the sub-regional centres tend to be limited.

Table 2

**Selected socioeconomic features of the analysed groups of towns (2014)**

| Features  | Agglomerated towns | Peripheral towns |
|---|--------------------|------------------|
| Mean number of inhabitants                              | 7114               | 4921             |
| Share of the population that is of pre-productive age   | 21.9               | 17.2             |
| Share of the population that is of productive age       | 63.7               | 63.9             |
| Share of the population that is of post-productive age  | 14.4               | 18.9             |
| Entities per 1000 inhabitants of post-productive age    | 188.2              | 174.2            |
| Balance between arrivals and departures for work (2006) | -297               | 231              |

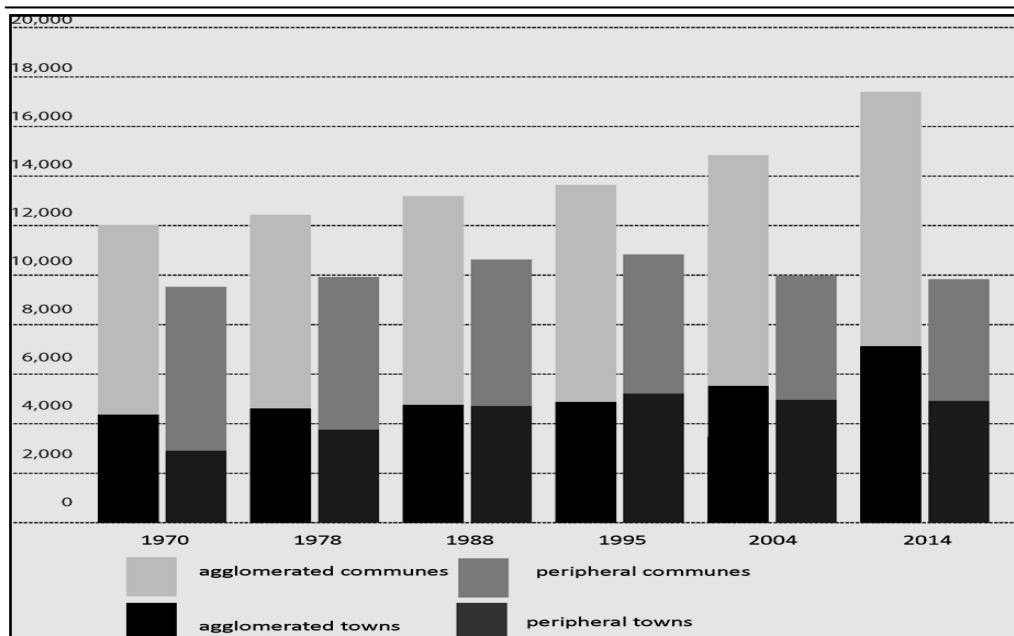
Source: BDL GUS (*Local Data Bank* of the Central Statistical Office)

The analysis of the changes in population over the 1970-2014 period shows that the towns in both categories have in fact been experiencing overall increases in population, albeit at different rates and with peaks in different periods (Fig. 2). Up to the end of the communist period, there was only a small increase in population (20 people per year) in the agglomerated towns. It was only in the 1990s that a more marked increase in the numbers of the inhabitants (up to 65 per year) took place, only to accelerate, in the most recent decade, up to 145 people per year. Demographic processes assumed this kind of course when the systemic transformation put an end to the policy of restricting the new registration in the towns and cities of the Warsaw agglomeration, and when the post-1989 suburbanisation process gathered pace. The trend was rather the reverse in the peripheral towns, which developed demographically the most prior to the change of political system, only to experience stagnation followed by a slight downward trend in the subsequent years. The population increase in the peripheral towns reflected a development of the industrial, production and construction activity in the communist era, with these towns attracting the rural population mainly seeking and finding work in professions not requiring a high level of professional qualification.

1) The basic units of Poland's territorial administration (*gminas*) are divided into rural, urban and urban-rural categories.

2) Units of territorial administration at the second level, taking in part of a region (*voivodeship*).

*Impact of the Locations of Small Towns in Mazovia (Poland) on their Socio-Economic Structure and on their Role in Relation to the Neighboring Rural Areas*



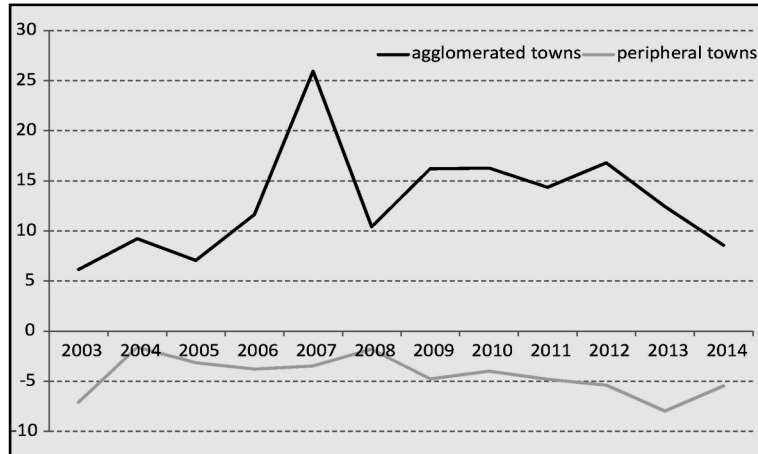
**Fig. 2 – Mean numbers of inhabitants in the agglomerated and peripheral towns and in their vicinity, in the period 1970-2014**

Source: own research based on the data of the Central Statistical Office

Interesting conclusions are to be drawn from the analyses of population trends in the vicinities of the studied towns. In the case of the agglomerated towns, the whole period 1970-2014 saw the share of the urban inhabitants among all those living in a given urban-rural gmina range between 36 and 41%, i.e. with only a slightly change. This reflected a similar tendency for the new incoming inhabitants to settle in either rural or urban parts. In contrast, the peripheral towns were characterised by an increased in the corresponding figure from 30% in 1970 to 50% in 2014.

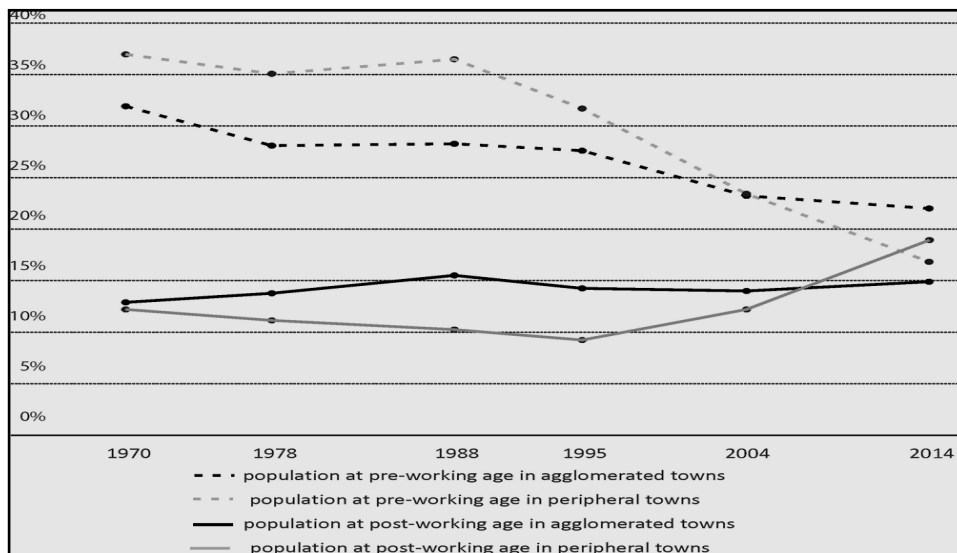
The processes of the spatial concentration and dispersion of population represent some of the fundamental factors describing regional development trends. It should be borne in mind that the current index for natural growth in Mazovia oscillates around 0‰, with migration thus representing the main factor conditioning the spatial differentiation to certain demographic features (Fig. 3). The migration balances for the peripheral towns have been negative for more than 10 years now, while those characterising the agglomerated towns have been positive, for the aforementioned reasons associated with the suburbanisation process.

A significant difference between the towns in the studied categories applies to the age structure of the population (Fig. 4). The agglomerated towns have a higher proportion of their population that is of young (pre-productive) age: more than 4% higher where the comparison is with the peripheral small towns, and more than 3% higher than the average for Mazowieckie voivodeship. A location in the immediate vicinity of a large town makes a daily commute to work possible, and – according to research from 2006, about 15% of the inhabitants of productive age in these towns do indeed commute daily to work – mainly in Warsaw or Radom. The effect is represented by similar living conditions and quality of life for those towns located close to the main centre. In contrast, important migratory outflows take place in the peripheral small towns, first and foremost among young people and women of marriageable age. In



**Fig. 3 – Migration balance in the 2003-2014 period (%)**  
 Source: own research based on the data of the Central Statistical Office

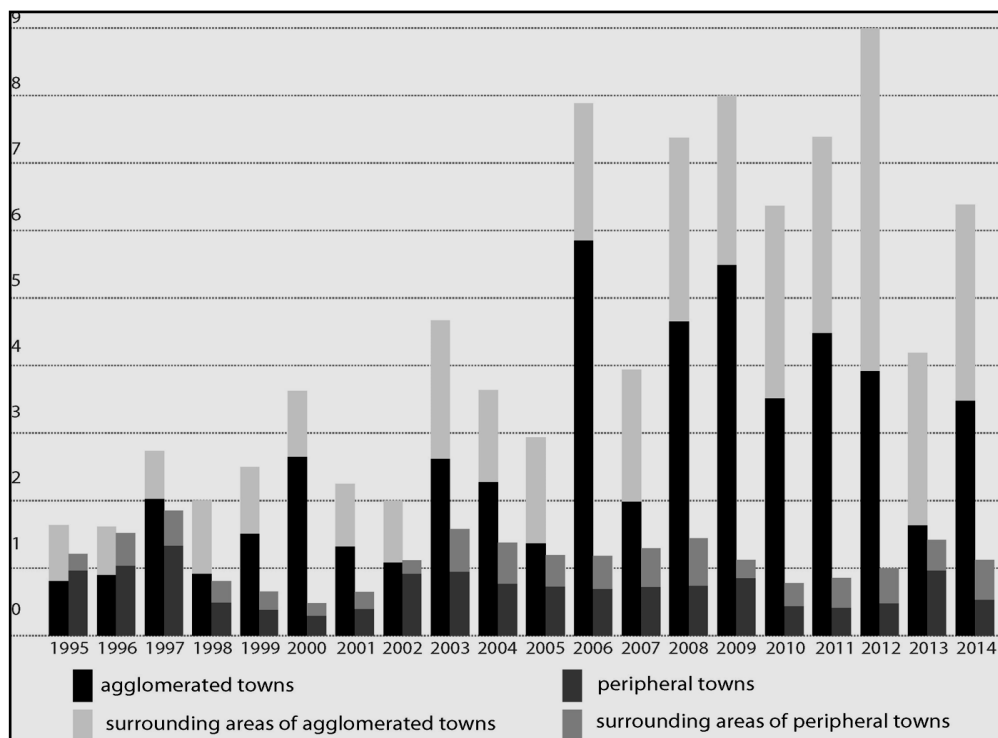
consequence, the peripheral towns under study suffer more from population ageing, with the share of the population made up of people of post-productive age being 4.5% greater than in the agglomerated towns, while the proportion of the population that is of productive age remains similar. Negative trends related to the demographic structure of peripheral towns first emerged as the systemic transformation began. They were characterised by a marked fall in the share of the population of pre-productive age, with the principal effect of this being an increase in the share of population of post-productive age (from 9% in 1995 to 19% in 2014). While the “surplus” of the young over the older inhabitants in peripheral towns stood at around



**Fig. 4 – Percentage changes in the shares of population accounted for by the different age categories in the agglomerated and peripheral towns**  
 Source: own research based on the data of the Central Statistical Office

720 people on average in 1970, there is today a prevalence of 110 people of the elderly over the youth in each town on average. The course of changes was in fact similar in the agglomerated towns, with the surplus of people of pre-productive age over those of post-productive age declining from 1600 on average to 640, even if there was no reversal of the overall trend. The process followed the same course in the rural areas in the immediate vicinity of the towns studied.

These demographic dynamics are reflected in the construction of new housing in both types of small towns (Fig. 5). While the construction of new dwellings in the small towns close to larger cities (and also in their surrounding areas) has experienced a major upturn since 2005<sup>3)</sup>, this has not been the case in the peripheral towns. The number of housing units constructed annually in these towns has been very limited through the whole period, and it showed a slight downward trend in the past few years. The growing number of housing units constructed in the



**Fig. 5 – Share of newly constructed dwellings in the total housing stock by types of small towns and surrounding areas (1995-2015)**

Source: own research based on the data of the Central Statistical Office

areas surrounding the small agglomerated towns indicates, in turn, that the processes of suburbanisation and sprawl involve the largest towns but they are also starting to impact the small towns. However, only those located in the vicinity of larger urban areas are prone to such

3) In 2008-2009, the dynamics for housing construction in the agglomerated towns was of 19 dwellings per 1000 inhabitants. This almost matched the level of construction observed in the suburban municipalities of Warsaw, like Piaseczno and Lesznowola.

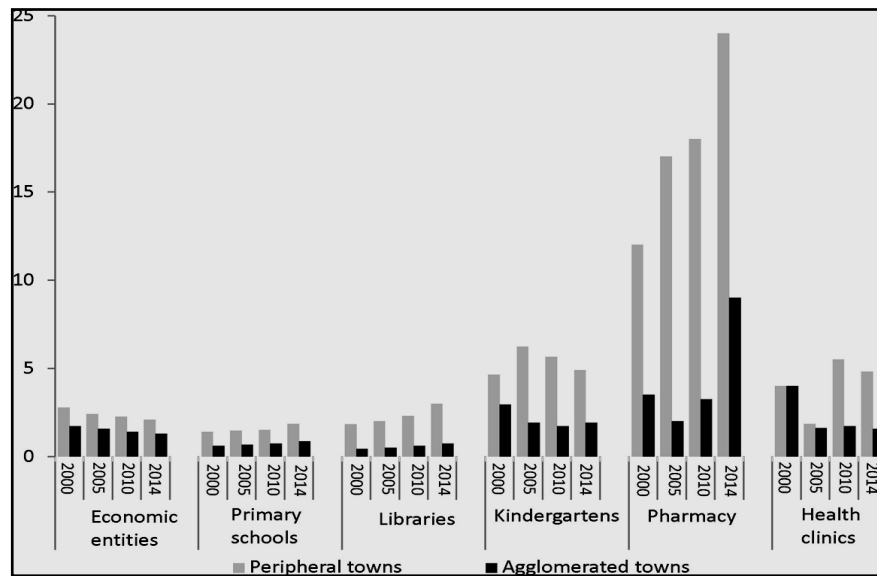
tendencies. The generation of new housing is dominated by individual-level constructions though private developers also support the process in the agglomerated towns. The role of the latter was rather minor through to 2006 (between 1995 and 2006, dwellings constructed by private developers accounted for less than 7% of all newly built stock); but it has been reinforced in the past decade (between 2006 and 2015, more than 61% of new dwellings were delivered by developers). It is worth noting that developers are hardly operating in peripheral towns and the areas surrounding them.

Towns located in the vicinity of large agglomerations differ from the peripheral centres in having a greater share of entities active in manufacturing, construction, R&D sector and market services. In contrast, the latter have a higher share of entities in commerce, transport, education, health and other non-market services. The peripheral centres would also seem to have a rather more balanced structure of business entities than the agglomerated towns. This probably reflects the different role these units from peripheral areas play in regard to the rural areas surrounding them. Besides economic functions, they also serve important social, service-related, commercial and communication functions. It is in the main centres that non-market services are concentrated, along with various manifestations of cultural life. In contrast, in the case of the agglomerated towns, a part of the functions (in healthcare, finance, education and transport) is discharged by the agglomeration centres themselves, especially when it comes to the inhabitants of rural areas.

Interesting conclusions are supplied by the analysis of changes in own income characterising the gminas (local authorities) associated with the agglomerated and peripheral towns. In the early 2000s, the level of this income expressed per inhabitant was actually higher in the peripheral towns under study, mainly as a consequence of receipts from property taxes – which were higher there when expressed per head. However, as the years passed, the gminas in the agglomerations progressed with the construction of a single-family housing and managed to attract more and more better-off people, with the result that gmina's own incomes associated with property tax grew, as did those deriving from income tax levied on natural persons.

Concentrations of selected kinds of business and social activity in the towns were also analysed, in relations to the rural areas surrounding them. A markedly higher concentration was found to characterise the peripheral towns, which constituted important centres servicing the surrounding rural areas (Fig. 6). Hence, these towns concentrated considerably more businesses and services than it would be expected from the number of people they have. In contrast, the agglomerated towns have far lower indices from these points of view, which is to say that the network of the studied social and economic institutions is spread diffusely across the whole territorial unit (town plus rural areas), with further elements of these being supplied by Warsaw and Radom. In certain cases (e.g. those involving libraries and primary schools), the numbers in the studied agglomerated towns are lower than it would be expected from their demographic potential. What it is also noticeable is the steady growth in importance of the small towns studied (be they peripheral or agglomerated), when it comes to what is made increasingly available by the educational and cultural institutions.

The greater significance of small towns, located in peripheral areas as local centres of development, is also confirmed by the analysis of shuttle migrations associated with journeys to work (Fig. 7). Notwithstanding an economic potential more limited than that characterising the agglomerated towns, the peripheral towns are characterised by a positive balance for the journeys to work. According to the 2006 Central Statistical Office data, the balance for journeys to work was positive and it amounted to some 75 people per 1000 of productive age. These values were very much made up for by negative values for the balance concerning the rural areas surrounding these towns, though it cannot be said that the "town-surrounding rural areas" system of commutes to work is closed in its nature, given that there are people who travel greater distances – to sub-regional centres or even to Warsaw. In the case of the agglomerated



**Fig. 6 – Concentration ratio of selected kinds of business and service activity in towns in relation to the surrounding rural areas (communes)**

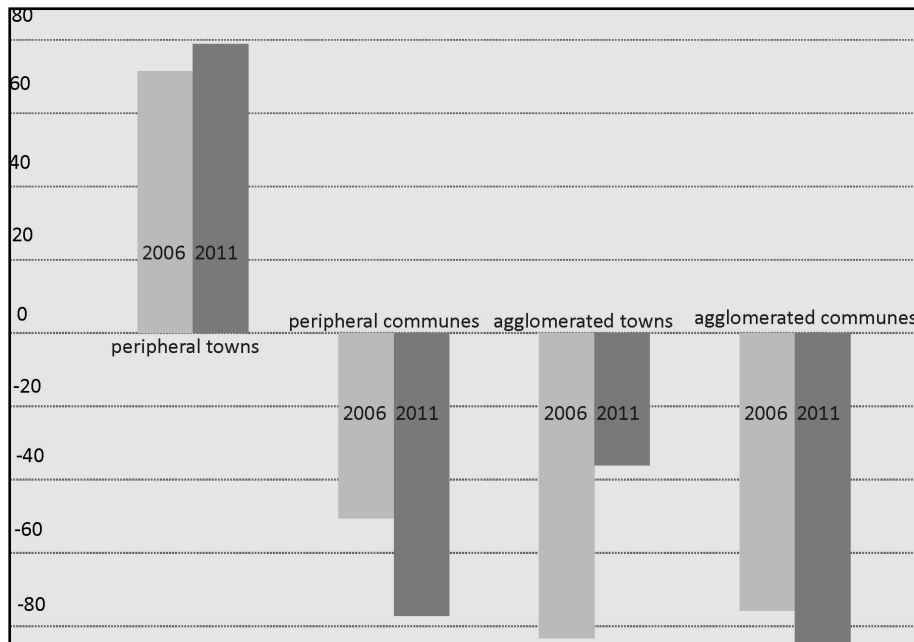
Source: own research based on the data of the Central Statistical Office

towns and the rural areas surrounding them, there were negative balances for travels to work in both considered years. Given the proximity of the very large labour markets represented by Warsaw (in the cases of Ożarów Mazowiecki, Serock, Radzymin and Pilawa), or else Radom (in the case of Skaryszew), the inhabitants of these towns and the rural localities close to them work mainly on these two labour markets. Among all those travelling into work in the agglomerated towns, only every fourth person lived in the rural areas surrounding the latter, which is to say only two-thirds as many as in the case of the peripheral towns.

The content analysis, based on the websites of 10 case studies of small towns, complements the information on the functional structure of these urban units. In particular, it shows the main marketing strategies of the given towns, as well as the particular features they seek to highlight. In general, the functional profiles of small towns in these two categories are quite differentiated. In the group of peripheral towns, the role of the tourism-related and recreation function (including through second homes) was underlined, in Chorzele and Różan above all. These towns are eager to attract new economic entities operating in tourism. In Lipsko, the goal of the “Lipsko Park” project implemented with EU funding was to develop active historical tourism, and to create a comprehensive tourist offer that took in the most valuable natural and anthropogenic resources of Lipsko and the surrounding areas. Nevertheless, the economy in Lipsko remains strongly based on industrial activities, as does that of Łosice. On the other hand, Przysucha is actively pursuing a strategy to strengthen the development of its industrial functions. The 2011 establishment of an Economic Activity Zone also confirms the particular value assigned to this direction of development.

The group of agglomerated small towns exemplify slightly different strategies for development and local marketing. Through their local development strategy and urban renewal programme, Serock and Radzymin attempt first to cater for the needs of the local population, and then to strengthen their role as a local recreation and tourism centre in the Warsaw agglomeration. Pilawa introduces itself as an administrative and commercial centre for the surrounding areas,

albeit with the majority of local residents commuting to work in Warsaw. Skaryszew highlights the provision of services and support for agriculture; while Ożarów Mazowiecki hosts key enterprises, widely known in Poland, that take advantage of Warsaw's proximity. Finally, Podkowa Leśna, as a garden-town dating back to the 1920s unspoilt by industrial activity, has completely different objectives. Together with the neighbouring towns, Podkowa Leśna is emphasising the strengthening and promotion of a local brand reflecting natural resources, unique architecture and heritage, and the presence and activity of local artists and craftspeople.



**Fig. 7 – Balance between arrivals and departures for work calculated per 1000 inhabitants of productive age in peripheral and agglomerated towns, and the surrounding rural areas, in 2006 and 2011**

Source: own research based on the data of the Central Statistical Office

This brief outline of individual case-study small towns revealed the several different strategies being used to build positions and to promote functional specialisations in relation to (peripheral or agglomerated) location, but also on the basis of local resources and heritage.

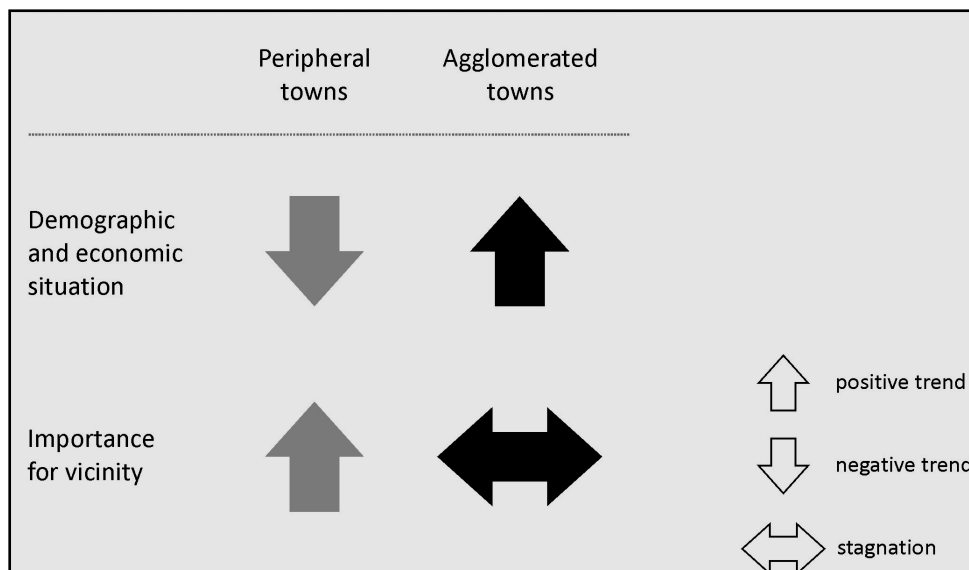
### Conclusions

The main goal of the paper was to explore and explain the role of small towns in Mazovia region with regard to their location, notably in the proximity of the Warsaw agglomeration or else, in a peripheral location. One of the consequences of geographical location was found to be a varied influence of institutional factors even in the communist era, with this doing most to affect the socio-demographic structure of these two groups of small towns.

The analyses carried out make it clear that small towns located in peripheral areas are characterised by unfavourable demographic processes, up to and including steady depopulation that mainly results from a negative migration balance plus population ageing. These processes began with the systemic transformation, only to gather strength in the

subsequent years. In turn, the small towns located within the wider surroundings of the agglomerations have been experiencing population growth assuming particular intensity in the last 10+ years. Thanks to migration inflows – above all involving young families with children – these centres continue to manifest a relatively favourable demographic structure.

Like previous studies carried out in the Czech Republic (Vaishar and Zapletalová 2009, Vaishar et al. 2015), this one confirms that small peripheral towns have much more important functions to supply to the rural areas surrounding them than agglomerated towns have. As a high rate of depopulation continues in rural areas, the relative demographic potential of the peripheral towns grows (Fig. 8). They furthermore concentrate different kinds of both service-related and productive activity, the level often being more than twice as high as it would follow from their demographic potential alone. Ultimately, they also often represent the only alternative when it comes to people finding a job – hence the positive balance where travelling to work is concerned. This result partially contradicts findings from the Kaluga region (Savoskul et al. 2014), in which a location on the fringes was directly associated with a process of stagnation in small towns.



**Fig. 8 – Development trends characterising Mazovia’s small towns**  
 Source: own research

In contrast, the agglomerated small towns are often located in areas with a very evenly distributed settlement network, to the point where they cannot be said to exceed the neighbouring rural areas in population terms (unlike their peripheral counterparts). In addition, the locations of the larger poviats, and above all the regional and sub-regional centres, ensure for these only a much more limited ability to compete, when it comes to the functions served in relation to the surrounding areas.

Small towns located peripherally thus serve key functions where the surrounding rural areas are concerned, even though they are losing internal potential at one and the same time. In line with the concept of neoendogenous development, a local system not possessing sufficient potential of its own is not always able to make full use of the existing external conditioning. In other words, in units characterised by lesser internal potential, the effectiveness of use of

external factors will be more limited than in towns in which the endogenous resources have been more fully built up. This is why a steady weakening of the potential of small towns may ensure a diminishing role for them in the future, and a more and more limited impact on the surrounding rural areas.

The recurrent question concerns how (and in relation to what dynamics) change will be observed in the upcoming years, in the rural areas surrounding small towns. A decline in the agricultural function is to be observed, as there are negative demographic changes in the areas around the peripheral small towns, though some studies have detected suburbanisation and sprawl in areas surrounding agglomerated towns. Such findings encourage further discussion of policies dedicated to small towns, and the need for a more territorial approach that would address the variety of location-related problems and the challenges that small towns face.

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## HIGH-SPEED RAILWAY AND TOURISM: IS THERE AN IMPACT ON INTERMEDIATE CITIES? EVIDENCE FROM TWO CASE STUDIES IN CASTILLA-LA MANCHA (SPAIN)

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**Abstract:** The expectations of cities served by High Speed Rail are numerous. Improvements in a destination's accessibility could lead to an increase in transport demand and the revitalization of urban and business tourism. However, High Speed Rail services do not automatically affect the choice of destination even if they improve accessibility. Even so, they can improve visitation rates when tourist amenities are located near High Speed Rail stations becoming therefore easily accessible. The development of tourism is also influenced by the collective strategies of local stakeholders. Larger cities also appear able to leverage higher tourist volumes from the construction of High Speed Rail and most analyses to date have focused upon them. Thus we focus here on how the arrival of High Speed Rail services has impacted tourism on medium sized cities. Using a diachronic study of different socio-economic variables and tourist features, this article analyses the impact that the new rail infrastructure can have on tourism in two selected cases in Spain: Cuenca and Toledo.

**Key Words:** *high speed rail, tourism, urban development, Cuenca, Toledo*

### Introduction

Transportation and tourism are closely related economic activities. In fact, promoting transportation infrastructure and guaranteeing efficient mobility are usually seen as contributing to the development of tourism industry (Albalade and Fageda 2016). Amongst the multiple determinants of the attractiveness of a particular location from the point of view of tourism, accessibility usually ranks in the first two or three positions. A beautiful landscape, a historical monument or a sunny and fine sandy beach hardly becomes a clear successful tourist destination if transport infrastructure does not allow a convenient, comfortable and safe way to get there and return. This issue is particularly relevant for Spain, a country that shares the feature of being one of the world's favourite tourist destinations while having Europe's largest high-speed rail network (second in the world after China) (Albalade et al. 2015). Furthermore, city size appears to be a major determinant of high speed rail's (HSR) impact on tourism (Delaplace 2012b). Thus, Bazin et al. (2013) reported that the increase in the number of tourists attributable to a new HSR service was minimal in many small and medium-sized European cities, although positive effects were detected in those places with good tourist amenities.

This article aims, first, to debate the theoretical impact that new HSR infrastructure has on tourism. Secondly, it analyses the effects on tourism of such infrastructure in two selected cities, Cuenca and Toledo, from several different perspectives – improved accessibility; growth in both visitor numbers and tourism-related businesses; improved image of tourist attractions; and the emergence of development strategies among stakeholders to market and enhanced visitor experiences, and therefore greater patronage. Nonetheless, any conclusions drawn from this article must take into account the short period of time since the completion of the HSR network to Cuenca and Toledo and its likely lagged effects on tourist visitation. In addition,

HSR's impact is likely to be affected by such extraneous events as the global financial crisis and its aftermath. After explaining the development of Spain's HSR network and the development of our theoretical and methodological framework, we will briefly characterize the selected cities' contrasting tourism models both before and after the completion of the HSR. This section will focus on their defining features and the range and quality of attractions. Finally, we will consider the potential future impact the new infrastructure might have in the light of various assumptions.

### **The development of Spain's high-speed rail network**

The main reason behind the birth of HSR in Europe, over and above other economic and political factors, was to unite large metropolitan centres and to realise the commercial benefits arising from the speed and efficiency of transport between them (Troin 1997, Vickerman 2015). This is particularly important for cities between 400 and 600 km apart (Vickerman 2016), where operating speeds of 250 km/h or higher between their commercial cores could generate substantial advantages over air transport, with travel times of less than three hours (Hall 2009). Subsequently, in both France (Troin 1998) and then Spain, which largely adopted the French model and network structure, intermediate stops appeared along HSR routes. For example, when the second generation of French HSR routes commenced back in the 1990s, the *TGV-Méditerranée* and *TGV Atlantique*, the intermediate territories defended their interests claiming that they would suffer all environmental costs involved in the construction of a new line, but they would not receive any of the alleged benefits associated with greater accessibility through the HSR stations (the well-known "tunnel effect"). Railway managements accepted the claim that intermediate stops on the new lines could expand the potential market (Facchinetti-Mannone et al. 2013). Additional justifications for intermediate stops included political integration, economic restructuring and territorial cohesion. Such claims were based on the assumption, widespread among public opinion and political environment, that HSR promotes growth and territorial development, an argument which, as shown in other studies, it is not always true (Bellet et al. 2010, Albalade and Bel 2015). Spain's response to local pressures along HSR routes created even more intermediate stops than in France, having approximately one station every 70 km.

Spain's AVE (*Alta Velocidad Española*) has "*dedicated, high-speed, standard-gauge tracks that serve both high-speed and conventional trains equipped with a gauge-changing system, and conventional, nonstandard gauge tracks that serve only conventional trains*" (Todorovich et al. 2011: 8). Perl and Goetz (2015) have labelled the Spanish model as a comprehensive national network with extensive new infrastructure development linking major cities and mid-sized communities across the country while using a predominantly radial network centred on Madrid. High speed rail services in Spain commenced on April 21, 1992 with the opening of the 471 km Madrid-Seville (471 km) southern corridor. By choosing Seville as a destination, Spain became the only European nation not to commence its HSR services along its most congested corridors or to connect its most populated cities. However, we acknowledge that the conventional southern link was arguably somewhat congested. Several studies point to a political rationale for this strategy, namely the promotion of economic development in one of the country's poorer regions and thereby assisting the national cohesion through improved territorial equity, albeit at a high economic and social cost to the nation (Sala-i-Martin 1997, Albalade and Bel 2012).

This first rail line brought five HSR stations into use. Table 1 shows the subsequent HSR network expansion since 2003 starting with several strategic axes: Madrid-Barcelona-French border (this HSR line came into service in four stages corresponding to the following stretches of track: Madrid-Lleida, Lleida-Camp de Tarragona, Camp de Tarragona-Barcelona-Sants, Barcelona-Girona-Figueres); Madrid-Levante; and Madrid-Northwest (unfinished). Many additional rail connections such as Cordoba-Málaga and Madrid-Toledo, has yielded a network of more than 3 100 kilometres of high-speed lines (LAV) today, connecting 31 cities through 36

HSR stations and serving more than 60% of the Spanish population. According to the operating company, 9 out of 10 citizens currently live less than 30 kilometres from a HSR station. In 2015, more than 33 million passengers per year used high-speed trains, travelling at an average commercial speed of 222 km/h, higher than Japan's 218 km/h and France's 216 km/h. However, this situation contrasts markedly with HSR ridership (number of trips) figures, which show that ridership is much higher in France, Germany and Italy despite their more limited networks. While ridership in Japan is well over 300 million, and over 110 million in France, the number of trips on the Spanish HSR network is much smaller (almost 31 million in 2015), and if we consider the intensity of network use (passenger-km per km of network), the ridership in France is five times higher than in Spain, while in Germany and Italy it is 4.4 and 2.6 times higher (Albalade and Fageda 2016).

Different scholars consider that high-speed railway is able to compete with the private vehicle avoiding the traffic congestion problems in the environment and entry to major cities for distances less than 400 km. However, some authors have questioned the hypothesis of replacing part of air traffic by the opening of high-speed lines, taking into consideration the pace and shaping of the Spanish HSR network, as well as the impact of specifically demand-induced by HSR (Guirao Abad 2000), clearly influenced by the location of the HSR station. Analyses of substitution between the two transport modes confirm the hypothesis that HSR and the airlines would seem to offer more independent services than it might first appear. As some experts have cleverly pointed out, a huge range of dynamics operate here, such as the rise of budget airlines. The need of airline passengers to connect with on-going flights and intermediate airports (especially connecting to international flights), and the issue of flight frequency and the number of flights per day between two cities seem to be expanding constantly.

The results of some research apparently confirm the hypothesis of the HSR's great ability to generate its own demand (Castillo-Manzano et al. 2015). The substitution rate between the two transport modes seems to be closely linked to the way that any new stations are incorporated into the HSR network. Although the rate varies significantly over the study period, only 13.9% of HSR passenger demand was found to have come from air travel during the 1999-2012 period. Thus, even in the most geographically extensive HSR 'network' in the world compared to the surface area involved, the Iberian Peninsula, there is no empirical evidence at all that the network has generated any clear network effects that will attract more passengers from air transport. In other words, the expansion of the network, with some lines offering less than doubtful social profitability and clearly following political criteria (Bel 2011), has seen the substitution rate with air transport falling over many years (Castillo-Manzano et al. 2015).

The program for the trans-European transport network (TEN-T), as introduced under the Treaty of Maastricht and defined in the Decision 1692/96/EC in 1996, is designed to guarantee optimum mobility and coherence between the various modes of transport in the Union. The TEN-T focuses significantly on the development of high speed transport. Of the 30 priority projects put forward under this program, no fewer than 14 concern high-speed lines. Of those, only three high-speed railway lines have been labelled as priority axes and projects establishing connections between major cities on the Iberian Peninsula, and linking them with the French high-speed network. New high-speed railway lines (built to standard European gauge in Spain and Portugal) will link Lisbon and Porto to Madrid. However, for the time being, and given the economic difficulties, both projects have been cancelled by the Portuguese government. From Madrid, two branches – Atlantic and Mediterranean – will connect to the French HSR network. In Spain, in addition to support from TEN-T funds, development work is also receiving substantial support from the Cohesion Fund.

In Spain, the network layout and the choice of rail lines has not so far given priority to population density and possible traffic density. Current infrastructure plans are however

Table 1

**Chronology of high-speed railway lines and stations in Spain**

| Opening date          | High-Speed Rail line            | High-Speed Rail stations in Spain                                |
|-----------------------|---------------------------------|--|
| <b>April 1992</b>     | Madrid-Sevilla                  | Madrid Atocha, Ciudad Real, Puertollano, Córdoba, Sevilla        |
| <b>October 2003</b>   | Madrid-Barcelona-French border  | Guadalajara-Yebes, Calatayud, Zaragoza-Delicias, Lleida-Pirineus |
| <b>November 2003</b>  | Zaragoza-Huesca                 | Huesca, Tardienta  |
| <b>November 2005</b>  | Madrid-Toledo                   | Toledo   |
| <b>December 2006</b>  | Madrid-Barcelona- French border | Camp de Tarragona  |
| <b>December 2006</b>  | Córdoba-Málaga                  | Antequera Santa Ana, Puente Genil                                |
| <b>December 2007</b>  | Madrid-Valladolid               | Madrid-Chamartín, Segovia-Guiomar, Valladolid                    |
| <b>December 2007</b>  | Córdoba-Málaga                  | Málaga-María Zambrano  |
| <b>February 2008</b>  | Madrid-Barcelona- French border | Barcelona-Sants  |
| <b>December 2010</b>  | Madrid-Barcelona- French border | Figueres   |
| <b>December 2010</b>  | Madrid-Valencia-Murcia          | Cuenca, Albacete, Requena-Utiel, Valencia                        |
| <b>December 2011</b>  | Madrid-Galicia- Atlantic axis   | Ourense, Santiago de Compostela, A Coruña                        |
| <b>January 2013</b>   | Madrid-Barcelona- French border | Girona   |
| <b>June 2013</b>      | Madrid-Valencia-Murcia          | Villena, Alicante  |
| <b>March 2014</b>     | Madrid-Sevilla                  | Villanueva de Córdoba-Los Pedroches                              |
| <b>April 2015</b>     | Madrid-Galicia- Atlantic axis   | Vigo-Urzaiz  |
| <b>September 2015</b> | Valladolid-León                 | Palencia, León   |
| <b>December 2015</b>  | Madrid-Galicia                  | Zamora   |

Source: Authors' data based on ADIF information

addressing the HSR connection of provincial capitals to a network centred in Madrid, emphasizing their important relations with the National Capital as formulated by the former Prime Minister José María Aznar on 25 April 2000. Political-administrative and territorial issues have therefore come to the forefront over the efficiency and cost of transport (Guirao Abad 2000, Albalade and Bel 2015). Thus, the rationale for extending the network in Spain is to fulfil the political aim of centralizing rail connections, and, only in a few cases, the projects under the Trans-European transport network (TEN-T) had priority and affected the local decisions. Many intermediate stops serve small and medium size cities located in areas of low population density, whose urban polarities are little (or poorly) defined (Garmendia et al. 2012). Thus many new HSR stations were located without distorting the planned route of the railway line and placed on the edges of such cities or even in their periphery (Bellet Sanfeliu and Jurado Rota 2014), while in major urban centres stations retained their central location (Fig. 1). In other words, in the case of intermediate stops, the economic logic of transport efficiency takes pride of place over other needs, ignoring the existing urban and territorial structures (Vickerman

et al. 1999). This can be justified because the traffic that really justifies HSR investment is mostly generated by large cities and the only way to minimize slower travel times, at a reasonable cost, is to locate stations on the periphery of small to intermediate cities (Bellet 2016).



**Fig. 1 – HSR Spanish lines and stations (September 2016)**

Source: updated from Bellet 2016: 46

Nevertheless, it should be remembered that passengers are not necessarily concerned with the station-to-station travel time when deciding their choice. Door-to-door travel time is of importance, together with the convenience and reliability, and the cost (an element we do not deal with here) of the entire chain of journeys from the beginning to end of a trip (Givoni and Banister 2012: 306). The characteristic of HSR, like with air travel, often means that most of the travel time (and effort) is spent on getting to and from the HSR station, and this constitutes the bulk of the journey travel time (Bellet et al. 2010). Givoni and Banister (2012: 307) argue that there are two important consequences arising from this fact. First, HSR travel can be not attractive for many travellers, despite its faster speed compared to other modes, especially when the origin and/or the destination are not in the city centre. Second, any time savings on the rail journey from the high speed section might be lost on the additional time taken for access and/or egress journeys to/from the HSR station. Finally, in the trade-off between the time spent on the train and on getting to it, some experts say that it is likely that passengers will prefer to reduce the access time (Brons et al. 2009).

Such arguments in favour of locating intermediate stations closer to city centres voiced by local residents or transport and urban planners seeking reduced access times may however be overstated to maximise, if possible, local convenience. Of course peripheral HSR stations

extend access times and therefore overall trip length and lose one of the main virtues of rail transport when HSR stations are located within a built-up area or even the city centre (Vickerman et al. 1999). Another urban and physical planning problem centres on the difficulty of articulating the new fringe HSR transport nodes (Bertolini 1996) with the existing urban fabric and territorial structure. Despite these observations, peripheral locations may create development opportunities, because around the new HSR station there is usually available land at affordable prices to promote new industrial, commercial or even residential centres. On the other hand, such locations may have little immediate development potential for communities struggling to retain their populations or where connections to other transportation options (mixed-mode commuting) are poorly developed. Thus, it could take decades to acquire activities normally associated with a railroad stop. In France, some cases of HSR stations located in the urban periphery have favoured new developments and real estate activities in their immediate surroundings, especially those related to the activities of the advanced tertiary sector. But in fact there has been little identifiable local economic development associated with many of these HSR stations: either they have attracted only few new activities or the activities have not been those initially desired (Facchinetti-Mannone and Bavoux 2010).

In some cases, the choice of location, away from the built-up urban area, and the poor connectivity with the local or regional transportation network, have caused a loss of opportunities that has involved modest levels of services and railway traffic. As a result, the peripheral HSR stations tend to give poorer results in terms of traffic and services (Preston and Wall 2008). To what extent the distance from the HSR station hampers to potential tourist flows is an enigma that we will consider in this paper. In any case, some of the examples that we will detail here have reached neither the expected number of passengers nor the number of services intended, or the desired economic impact. And this has a cumulative effect, because train operators are reluctant to build additional railway stations with high-speed services, especially when final journey times are critical in relation to competition to air transport, so that services are reduced and these become less attractive to potential users.

### **High speed rail and tourism: conceptual background**

Interestingly, most traditional theories and models proposed to explain the development of tourism and preferred destinations have not identified transport as a major factor in the process. In fact, the analysis of its role is often underestimated and, following some scholars: *“Little serious research has been undertaken into the significance of transport as a factor in destination development”* (Prideaux 2000: 54). Nevertheless, *“transport is intrinsically linked to tourism behaviour since, by definition, the tourist is a traveller”* (Delaplace et al. 2014a: 2).

However, the last decade has seen several important studies that have focused on the interactions between HSR systems and the tourism market. These include work by authors from France (Masson and Petiot 2009, Delaplace et al. 2014a, Delaplace et al. 2014b), Italy (Pagliara et al. 2013, Pagliara et al. 2015), China (Wang et al. 2012) and Spain (Guirao and Soler 2008, Gil Álvarez 2010, Albalade and Fageda 2016). Some of these studies assume that new transport infrastructure will result automatically in a substantial improvement of accessibility, influencing tourism in two interconnected ways. Firstly, there will be potential sources of new tourists and, in that sense, the enlargement of demand-side markets; and, secondly, changes in the existing patterns of tourist flow, spreading them more evenly across the year. In short, where HSR projects exist, the analysis shows the idea that the commissioning of a HSR line should benefit the tourism sector: *“Besides business journeys, tourism is the first sector to show an immediate effect following the inauguration of an HST line. Indeed, the number of tourists in cities linked to the network tends to increase thanks to this alternative mode of transport”* (Albalade and Bel 2012: 345). A larger volume of tourist traffic would increase turnover in the sector and generate higher tax revenue from visitor expenditure, while its less marked seasonality would provide more balanced occupation of accommodation

throughout the year. This rationale is based on the weight of business tourism and weekend-short stays of urban/cultural tourism. However, decreasing seasonality could come from sources other than better HSR access. Such variables could include higher holiday allowances, greater wealth and income, and an ageing population with greater propensity to travel, higher car ownership, and so on.

Furthermore, other specialists continue to point out that if the station is located in the city centre, places of urban tourism are more easily accessible without loss of time for tourists. A HSR service allows visitors to access their destinations faster and with less fatigue, by avoiding congestion and navigation difficulties in the heart of cities, especially when travelling by car. These benefits are even greater when the station is located close to the city centre. It may also allow foreign tourists visiting major cities to select a secondary destination that can be visited during the day with a round trip by train (Delaplace et al. 2014a). Notwithstanding these benefits, the role of transport infrastructure in tourism development could be ambiguous. In the case of the HSR, the effects may be conditioned by the existing tourism resources. The direction of causality is often very unclear. It is also true that the most optimistic expectations may be obscured by the fact that this transport improvement is often synonymous with the reinforcement of spatial competition between tourism destinations.

Since the 1970s, the belief that improvements to transport access through HSR implementation could trigger wealth and prosperity was gradually abandoned. It was realised that the local portfolio of tourist attractions and the strategies developed to enhance them were just as important. This new realization thereby modifies the cause and the effect relationships between the investment in the transport infrastructure and an expanded role for tourism in the economies served by HSR. In short, the effects depend on the space economy in which the HSR fits (Masson and Petiot 2009), and the conditions that led to the appearance of these impacts include: a) the existence of strong local potentialities; b) the existence of local strategies; c) the development of specific aspects of the tourism sector such as urban tourism and business tourism (Masson and Petiot 2009).

Accordingly, although expectations were important in France, Italy and Spain, a literature review of studies carried out ex-post shows that the effects are not systematic, since *“they depend on the implementation of the HSR service and on the characteristics of the territories. It can be noted that, if the high speed rail allows, in some cases, the increase in the number of tourists, a decrease of the stay may follow. To understand the role of HSR, it is necessary to take into account the changes of accessibility, but also its effects on the image of the destination and on the coordination of the stakeholders”* (Delaplace et al. 2014a: 1). The arrival of an HSR service in cities might generate high expectations of improved tourism, but this is yet to be demonstrated because the results of various studies are often contradictory.

Two revealed preference surveys were carried out in Rome in April 2012 (Pagliara et al. 2013), and in Paris in October 2012 (Delaplace et al. 2014b). The objective was to investigate the role of HSR in the choice of destination for tourism purposes and on the probability of visiting other cities and returning to Paris or to Rome. In the case of Rome, only 26% of the respondents were positively influenced by the presence of the HSR for the destination choice, but in Paris, 49% of the respondents were positively influenced by the presence of HSR in the destination choice. Apparently, several factors influence the choice of tourists, like the presence of architectural sites, the quality of promotion of the destination itself, the presence of special events, but the HSR system has affected the choice of Paris and Rome differently. The authors argue that *“the two cities belong to two different countries in which the history of HSR service was very different; in France HSR was considered a real transport mode alternative, while in Italy it was a relatively new system, with high travel costs, which still needs a campaign of promotion to be well accepted among the users and therefore the tourists”* (Delaplace et al. 2014b: 174). However, as some experts pointed out, Paris is much more central within Europe

and both France and neighbouring countries to the north and east are perhaps more wealthy than Rome and Madrid hinterlands. Also, Paris has for a long time been a premier tourist destination and it is higher on the tourist 'radar' than Rome or Madrid (Berger 2015).

A year later, in June 2013, a new survey on tourists' choice of a destination was conducted in Madrid (Pagliara et al. 2015). In this case, the preliminary results showed that the Spanish HSR system seems to have a significant effect on the tourists' choice to visit other cities close to Madrid, but the choice of Madrid as a tourist destination is not influenced by the presence of HSR, while other factors play a significant role. The conducted questionnaire has shown that, in general terms, domestic and foreign tourists have different characteristics and behaviours. Therefore, the implementation of tourist products specifically adapted to each demand segment seems essential to strengthen the tourist attraction in a competitive environment (Pagliara et al. 2015: 193). HSR shows great attractiveness for foreign tourists, as they generally value aspects such as comfort and travel time reductions, and they are generally less sensitive to ticket prices. Thus, in Spain, the public institutions dealing with the tourism promotion specifically and those involved in the regional development strategy seem to be aware of that. Some steps to promote the use of HSR by the foreign tourists have been taken in the right direction, such as the creation of the *Avexperience* consortium and the implementation of the *Spain Pass* (Pagliara et al. 2015: 194).

The analysis conducted by Bazin et al. (2013) in some small and medium-sized cities in Northern, Atlantic and Eastern Europe served by HSR shows that, despite an improvement in the accessibility even in cities with a tourist heritage, the increase in tourists due to HSR is minimal. For cities of intermediate size, positive effects can be discerned, provided that they have strong 'basket of tourist goods' in terms of number, quality and diversity. Spanish effects are similar to those in France and Ureña et al. (2009) argue that such large intermediate cities served by HSR, as Lille, Zaragoza or even Cordoba, are likely to see a growth in urban and business tourism. Similarly, Todorovich et al. (2011) reported that, since the start of the HSR service in Lleida in 2003 and until 2009, tourist visitation has increased by about 15 percent and the demand for business conventions has risen 20 percent. However, they emphasize that this was not the case of Tarragona, because of the remoteness of the station relative to the most attractive coastal areas. An increase of tourist movements is however mentioned in Taiwan (Cheng 2010) or in China, where some cities have benefited from a HSR service (Wang et al. 2012). Provinces served in China by HSR "*are likely to have approximate 20 percent additional numbers of foreign arrivals and 25 percent greater tourism revenues than provinces without such systems*" (Chen and Haynes 2012: 1).

Thus, it seems clear that the tendency to generalize is wrong because some positive impacts identified in certain types of cities, with specific strengths, are not always applicable to others. As noted by some experts, "*accessibility to infrastructure is (...) seen as an initial condition for development by a large number of political actors, this indicating a widespread confusion between accessibility and attractiveness*" (Berion et al. 2007: 655). The extreme heterogeneity of tourist and business destinations underlines their necessary contextualization (Delaplace 2012a). HSR and its commercial, cultural or demographic effects cannot be understood independently of the socio-economic characteristics of the served areas, in tourism as in the other contexts (Bazin et al. 2013). Moreover, we must take into account some possible complicating issues (Levinson 2012). For example, if the number of tourists increases, the duration of their stay, in some cases, can be reduced. HSR allows the arrival and departure during a single day. Furthermore, this reduction in length of stay might also reflect the strategies of some businesses to move to day-long meetings in order to reduce travel budgets.

The most recent analyses of the relationship between HSR systems and tourism markets highlight the role HSR services can play in boosting tourism whenever it is able to affect the behaviour of tourists, in terms of chosen means of transport and the length of stay, and their

choice of the destination. This is not simply a question of making cities more accessible, but it also results in the improving of their image while enhancing the coordination with and within the destination (Delaplace et al. 2014a). The issue of image enhancement is extensively discussed in the literature (Bazin et al. 2011), and it is seen as a factor from which tourism can benefit. HSR services can improve the attractiveness of a city's image by promoting its identity and, thereby, by enabling it to develop its tourist attractions. This characteristic, described as semiotic, is a positive factor both for the stakeholders of the served territories and for tourism. As a clothing brand adds value to a suit, equally the HSR services provide benefit to the served areas (Delaplace et al. 2014a). However, communication policies are obviously limited in small towns and the effects of distinctiveness diminish over time due to an increasingly dense network of served routes and cities. This image effect is also associated with a "club" policy for the served cities in France, which is not only symbolic: *"In these clubs join many public stakeholders at different scales (cities, provinces or regions), as well as private ones. Although it is difficult to measure this image effect, some trends are evident. In Reims, for example, recently, if tourists coming from the Ile de France region continue to increase, the data collected from the tourist office at the station show that the share of tourists travelling by TGV has decreased. Thus, the destination Reims is now one of the possible destinations, among the cities served by TGV service, worthy of a communication policy to encourage the renewal of the cultural supply"* (Delaplace et al. 2014a: 8).

The development of tourism is also influenced by the collective strategies of local stakeholders, including the railway operator, promoters of business tourism, public-private actors or non-profit organizations operating in the entertainment and culture sectors, and local residents. Access to an HSR service can also help bring about the coordination of many local actors in the tourism sector to create an agreed image of a particular location. In this way, various actors such as a city's economic development agency or a regional tourist office might be encouraged to work together to define and promote the destination's tourist potential rather than to blur it through conflicting information or images. Tourist packages might also be developed including HSR services providing access to the location concerned or, alternatively developing procedures to enable tourists to create their own "basket of territorialized goods and services" (Pecqueur 2003). Packages can also be constructed to encourage visitors to stay overnight by including a range of cultural experiences.

In Spain, a recent study from the economic perspective (Albalade and Fageda 2016), points out that the main impact of HSR on mobility is to substitute airline passenger volumes, rather than to induce a higher number of new trips, a result countering the findings of other investigations (Castillo-Manzano et al. 2015). The analysis has been conducted at the provincial level using an econometric strategy based on the implementation of the differences-in-differences panel data method. They evaluate how HSR impacts on two tourism outcome variables: the total number of tourists (visitors) and the mean duration of their stays (number of overnights). They draw on tourism data provided by Spain's National Statistics Institute (INE) that covers 50 provinces with a 15-year time span (1998-2013). Hence, they have a sample with 750 observations. The method chosen is a slight extension of the differences-in-differences estimation procedure specified as a two-way fixed effects model: *"The differences-in-differences method assumes that a counterfactual is estimated by considering the change in the outcome variable for the control group and the expected change recorded by the treated group if treatment had not occurred. However, for this assumption to be valid it is necessary to demonstrate that the temporal effect in the two groups of provinces (treated and controls) is the same in the absence of HSR"* (Albalade and Fageda 2016: 180).

Two policy variables are employed that consequently produce different specifications and evaluation outcomes. First, the impact of HSR is evaluated using a binary variable that takes a value of 1 if HSR is available in the province and 0 otherwise. Second, a discrete variable is used to identify the number of HSR destinations available from any given HSR node. Beyond

these policy variables, several groups of explanatory variables are controlled for here. First, there are considered time varying provincial characteristics that can affect the growth of tourism. Thus, the province size is introduced by including the total number of inhabitants (population), given that the total number of tourists is the dependent variable. Moreover, changes in the weather over time are controlled for by including the annual precipitation (rainfall) and the changes in the economic cycle are taken into consideration by including the unemployment rate of the province. They also include as explanatory variable the traffic moved by the airports of the province, as well as several variables related with the dynamics of the air transport market in Spain: a binary variable that takes value 1 for hub airports and the number of operating basis of low-cost airlines. Finally, we include a binary variable that takes the value 1 when a new terminal is working. This variable accounts for the capacity expansion (Albalate and Fageda 2016).

The results provide mixed evidence about the impact of HSR accessibility on tourist outcomes. On the one hand, they find that air traffic is negatively affected by HSR and air traffic is a strong predictor of tourist arrivals. This suggests a negative indirect effect of HSR on tourist outcomes (Albalate and Fageda 2016: 174). On the other hand, HSR may have a positive (weak) direct effect on tourism. However, such result is conditioned by the used measure of HSR accessibility and econometric technique. Thus, the net effect of HSR on tourism outcomes is not consistently positive. In any case, as some scholars argue, the analysis is not very convincing as there seem to be many mediating processes going on: the existence of budget airlines and their prices relative to HSR, quality of road access, proximity to major tourist attractions, quality and quantity of tourist attractions at the destinations, seasonal issues, adjacency to international tourist attractions and many others.

In their concluding remarks, Albalate and Fageda (2016) emphasize that HSR has failed to promote tourism in the areas (provinces) receiving new HSR lines. HSR seems to have a detrimental impact on air traffic so that HSR is more competitive than air travel. Still, HSR may be more competitive in terms of frequencies, travel time and comfort and not necessarily in terms of price. Given that travellers for tourism are more sensitive to price than to time, the overall competitiveness of HSR in relation to aviation may not have a positive effect on tourist outcomes (Albalate and Fageda 2016: 183). However, this general conclusion should be qualified, since business tourism practiced by professionals and high-income socio-economic categories is relatively sensitive to price but very highly sensitive to the quality and speed of service. In addition, early HSR ticket offers and promotions turn certain cities, with a good cultural offer and tourist promotion, into very competitive destinations for short-term stays (weekends and long weekends) throughout the year.

With regard to the scale of research, as other scholars have highlighted (Delaplace 2012b), the city size appears to be an important determinant of the impact of HSR on tourism, while data at the provincial level does not provide accurate information about what happens to other different urban scales. Some surveys have been made in big cities and theme Parks but very little progress has been made across the city size spectrum. In fact, it must be recognized that the whole study area is embroiled in uncertainty of cause and effect when it comes to travel access and tourism. Thus, we need to obtain more information concerning medium sized cities in different countries.

### **Methodology**

The results reported in this article are the product of a broader research project, which has focused on the analysis of HSR in Spain and its impact on urban transformation patterns and associated local development strategies. Two of the main goals of the project are:

1. The design of a systematic study methodology of possible urban transformations (socio-

- economic and functional) raised by the implementation and commissioning of HSR services in medium and small cities.
2. The analysis and cataloguing of actions and urban strategies that have been implemented in medium-sized and small Spanish cities to seize the opportunities offered by HSR.

Also related with this second objective, we focused on the issue of potential tourism impacts associated with the opening of new HSR lines and stations. In any case, and for the purpose of this article it has not been our intention to collect data and analyse all HSR lines in a large and tourist country as Spain. Far from this goal, we have followed the line of research of other authors who have concentrated their efforts in the study of the impacts of HSR in cities located at short or medium distance from big cities and for which the travel time from the big metropolitan area does not exceed one and a half hours. Just as an example, we will mention two contributions. Bazin et al. (2013) restricted their analysis to the TGV effect in tourist destinations reachable in a less than 1.5-hour trip to/from Paris. Pagliara et al. (2015) study the impact of HSR in Madrid on tourist destination choice by means of a revealed preference survey. Results indicate that the presence of HSR does not seem to be a key factor influencing the destination choice of tourists because most of them are international tourists that can only arrive by air transportation. However, the use of HSR appears to be attractive to international tourists to visit nearby locations only.

Our study contributes to this literature by estimating empirically the impact of HSR on local tourism using a sample of municipalities surrounding the national capital, the Madrid metropolitan area. The sample of selected municipalities (Table 2) is based on several criteria: all of them are provincial capitals located in the country's inland at a distance from Madrid ranging from 72 to 300 kilometres. Likewise, all of them can be classified as intermediate cities, both by the number of inhabitants and by the role and functions that the cities play in their immediate territory, the influence and relations they exert and maintain in it and the flows and relations they generate towards the outside. Five are connected by HSR lines and stations with travel times not exceeding an hour and a half. Three out of these five cities are classified by UNESCO as world heritage, while the other two have a lower profile as tourist attractions. To the initial sample of five cities, we add three others that lack HSR connection but which are also declared by UNESCO as World Heritage Cities and are located at a distance from Madrid that turns them into tourist destinations for weekend or short stays. This sample gives us the

*Table 2*

**Medium-distance HSR services from Madrid and travel time for different modes**

|                                    | Opening of HSR station | Population (2015) | Distance from Madrid (km) | Travel time from Madrid (minutes) |     |     |                    |
|------------------------------------|------------------------|-------------------|---------------------------|-----------------------------------|-----|-----|--------------------|
|                                    |                        |                   |                           | HSR                               | Car | Bus | Conventional train |
| <b>Cities with HSR stations</b>    |                        |                   |                           |                                   |     |     |                    |
| <b>Toledo</b>                      | 2005                   | 83 226            | 72                        | 33                                | 65  | 55  |                    |
| <b>Segovia</b>                     | 2007                   | 52 728            | 93                        | 27                                | 85  | 75  | 113                |
| <b>Valladolid</b>                  | 2007                   | 303 905           | 196                       | 65                                | 145 | 135 | 178                |
| <b>Cuenca</b>                      | 2010                   | 55 428            | 168                       | 55                                | 105 | 120 | 188                |
| <b>Albacete</b>                    | 2010                   | 172 121           | 257                       | 91                                | 150 | 165 | 143                |
| <b>Cities without HSR stations</b> |                        |                   |                           |                                   |     |     |                    |
| <b>Ávila</b>                       |                        | 58 358            | 116                       |                                   | 90  | 80  | 100                |
| <b>Salamanca</b>                   |                        | 146 438           | 221                       |                                   | 147 | 165 | 170                |
| <b>Cáceres</b>                     |                        | 95 617            | 301                       |                                   | 180 | 235 | 236                |

Source: National Statistical Institute and RENFE

opportunity to compare cities with and without HSR, and therefore offers us the opportunity to separate the HSR effects from other factors.

After the first analysis on the evolution of travellers and overnight stays in hotel establishments for the sample of eight cities, we will focus on two exploratory case studies: Cuenca and Toledo. Moreover, why precisely these two cities? Because they represent two contrasting models of evolution and tourist dynamism despite the fact that both are served by HSR. An average, or typical case, is often not the richest in information. In clarifying lines of history and causation, it is more useful to select subjects that offer an interesting, unusual or particularly revealing set of circumstances

The methodology was both quantitative and qualitative, and focused on the collection and analysis of statistical data series. The *Tourist Accommodation Occupancy Survey*, conducted by the National Statistical Institute (travellers in hotel establishments; travellers in hotel establishments by nationality; average stay of travellers in tourist accommodation establishments; overnight stays by travellers) and the *Hotel Accommodation Official guide* produced by Turespaña. The *Tourist Accommodation Occupancy Survey* measures the evolution of supply and occupancy in hotel accommodation through the analysis of different variables: travellers, overnight stays, occupancy rate, number of establishments, average stay, etc. The collection of the information is carried out during seven consecutive days of each month chosen randomly, so that between all the establishments the complete month is covered. The data from this survey provide information at different scales: regional, provincial and "tourism interest points", municipalities with tourism relevance as defined by the Spanish National Statistical Office attending to their tourism supply facilities.

We have also collected information about schedules, frequencies and prices for HSR services in each of the two stations analysed. This quantitative approach has been supplemented by additional data and information obtained from interviews with some of the key local actors (managers from Tourist Offices and Convention Bureau and members of local Hospitality Business Associations); as well as a compilation of information obtained from the local and national press.

However, our research presents some methodological limitations regarding the used sources. Several cities included in the sample (Segovia, Toledo, Cuenca) receive an important volume of excursionists who can use the HSR but do not spend the night in tourist destinations. The travel times of less than one hour from Madrid and their status of heritage cities make them habitual destinations for both foreign tourists arriving in Madrid and Spanish tourists who travel from the state capital. The available sources to study the effect of HSR on excursionists (modal shifts and induced traffic) are varied but incomplete: data from tourist offices, entrance to certain monuments or museums, etc. In any case, they are not very reliable, comparable and do not cover the same registration periods across the two locations studied. Undoubtedly, the investigation and study of this type of sources would also benefit from surveys conducted among a representative sample of excursionists.

Finally, we cannot fail to mention two important facts. On the one hand, there is the disturbing factor of the economic crisis that Spain has suffered since 2008, a crisis from which tourism has begun to recover starting with 2013. To what extent the crisis has affected more or less the sample of cultural/urban tourist destinations and its varied resilience is an aspect that we must also take into account. On the other hand, the opening dates of the HSR lines differ for cities chosen between two and five years. If we take into account the time necessary to verify the effect of HSR on the sustained increase in tourism, the temporal gap may have implications that we should assess.

## **Results and Discussion**

### **Cultural and urban tourism in the context of the Spanish tourist model**

Spain welcomed more than 68 million international tourists in 2015. On the other hand, the internal tourism registered in the same year more than 160 million trips made by tourists residing in the country. Spain has focused its activity on the great flows of "mass tourism", with a strong concentration of supply on the coast. Thus, the vast majority of Spanish tourist destinations offer mainly the sun and sand product, with high doses of standardization according to the predominant demand profile, which has contributed to the reduction of their profit margin in recent years. The high quality and attractiveness of tourist resources, together with the extent of its infrastructures and facilities, have made the Spanish destinations of sun and sand the benchmark for the holidays of the middle-class Europeans. The success of this model meant its systematic replication throughout the Mediterranean coast and the islands, which has involved a high level of demand concentration, both spatially and temporally. With the exception of the Canary Islands, the seasonality curve has remained practically constant in the last ten years, both in international and national tourism. Tourist flows to Spain continue to be concentrated in summer (June-September), despite their sharp growth in the remainder of the year. Because of the concentration, some of the most emblematic destinations of the Spanish coast are in the stage of maturity.

Spain has established itself as one of the main tourist destinations in the world. More than 50% of the foreign tourism received throughout 2015 came from the United Kingdom, Germany and France. Travellers from the United States and South Korea increased by 23% and 86%, respectively. In fact, only tourists from Russia, Venezuela, the Philippines, and to a much lesser extent (1.21%) from Germany declined in 2015. By continent, 86.1% of tourists came from Europe, 7.1% from America, and the remaining 6.8% from the rest of the world.

The offer of Spanish tourist products is very varied and it is characterized by providing different types of tourist services that are partially adjusted to the new behaviours of the market. The sun and sand product remains the indisputable engine of Spanish tourism, although affected by a high level of maturity. The cultural and city tourism is a reality within the broad set of tourist products in Spain and it offers a high potential of competitive growth that should be based on a greater segmentation and specialization of the destinations. The rest of products – such as business and convention, health and wellness, sport, or rural and ecotourism – are at the development stage.

Spain offers a large number of cultural attractions and it ranks second globally in terms of UNESCO World Heritage Sites, including 13 cities and 41 monuments. Approximately 10% of tourists arriving in Spain are culturally motivated and, given that the stock of cultural products consolidates annually, this segment of the tourist market has the potential to develop further in the future. The progressive increase of tourists in the 40-60 years' age segment across Europe will also likely drive significant growth in demand for cultural and city tourism over the short to medium term. Likewise, greater accessibility to destinations, due to the expected expansion of air and intermodal transport, will mean that more and more cities and cultural tourism destinations will develop tourist initiatives introducing further competition into the market. The consequences in terms of urban and territorial policies are complex, as this type of tourism links up with the revitalisation of city centres and the development of infrastructures and events. Cultural and city tourist are typically characterised by a low seasonality and participation in such complementary activities as gastronomic consumption and shopping among others. Consequently, this market segment's higher daily expenditures make its development a leading future priority right now (Deloitte 2016).

### Tourism Models in Cuenca and Toledo

As explained earlier, we selected two case studies to investigate in depth the impacts of HSR systems on tourism and our results are presented here. Both Toledo and Cuenca are intermediate cities, albeit at the lower end of the population spectrum. They are both provincial capitals located in the Castile-La Mancha region and they are UNESCO World Heritage Sites. Toledo is a medium size town of 83 226 inhabitants (2015), located in the centre of the Iberian Peninsula, some 72 km south of Madrid, and it was declared a World Heritage Site in 1986 for its extensive cultural and monumental heritage. Toledo was one of the former capitals of the Spanish court and a place where Christian, Jewish and Moorish cultures coexisted. Cuenca is another medium size town of 55 428 inhabitants (2015), located 168 km east of Madrid and almost halfway between there and Valencia, located 218 km further to the east. It was also declared a World Heritage Site in 1996 for its extensive cultural and monumental heritage and its integration with the outstanding natural environment. Much of the old town overlooks gorges etched by the Júcar and Huécar rivers, providing a landscape of great value.

Its proximity to Madrid makes Toledo an urban-cultural destination for a large number of day-trippers. Visits of short duration often entail cursory contact with the city's heritage, limited to walking around its core and visits to the main monumental landmarks. Language tourism is an emerging market segment, linked to the supply of Spanish courses for foreigners at the University of Castile-La Mancha and the Centre for International Studies *San Juan de la Penitencia*, under the *Ortega y Gasset* Trust. In recent years Toledo has also been focusing on business tourism, including conferences, conventions, and seminars, taking advantage of several conditions: its proximity to Madrid; the power of its historical legacy; its role as regional capital; and the provision of a wide and growing range of facilities and services such as the Toledo Convention Bureau and the Toledo Conference City Trust (Cortés Alonso 2002). Toledo enjoys a privileged position in the Spanish tourism context. It is one of the most popular heritage destinations and it hosts approximately 1.5 to 1.7 million tourists a year (Troitiño Vinuesa and Troitiño Torralba 2009), most of whom spend a day or a few hours in the city. Although dominated by domestic visitors, Toledo's national prominence as a destination for cultural tourism attracts greater presence of foreign visitors than many other locations including Cuenca (Table 3).

Table 3

#### Percentage of travellers in hotel establishments between 2005 and 2015, by nationality

| Year | Cuenca            |                  | Toledo            |                  |
|------|-------------------|------------------|-------------------|------------------|
|      | Domestic tourists | Foreign tourists | Domestic tourists | Foreign tourists |
| 2005 | 90.8              | 9.2              | 72.5              | 27.5             |
| 2006 | 89.6              | 10.4             | 70.8              | 29.2             |
| 2007 | 86.9              | 13.1             | 71.6              | 28.4             |
| 2008 | 87.3              | 12.7             | 71.1              | 28.9             |
| 2009 | 84.4              | 15.6             | 72.8              | 27.2             |
| 2010 | 82.4              | 17.6             | 70.7              | 29.3             |
| 2011 | 83.1              | 16.9             | 67.8              | 32.2             |
| 2012 | 81.5              | 18.5             | 67.3              | 32.7             |
| 2013 | 84.3              | 15.7             | 68.2              | 31.8             |
| 2014 | 87.2              | 12.8             | 70.6              | 29.4             |
| 2015 | 87.6              | 12.4             | 68.6              | 31.4             |

Source: Tourist Accommodation Occupancy Survey, National Statistical Institute

Cuenca is a highly ranked tourist and excursion destination with further development potential and it already attracts about 800 000 visitors annually, for both leisure and cultural activities. Visiting monuments and historic sites ranked first, followed by the objective of enjoying nature. Given that Cuenca has a special harmony between nature and architecture, it is usual to combine the visit to the historic old town with a journey through some of the protected natural areas located in the same municipality. However official statistics show that the number of tourists visiting Toledo is more than double those visiting Cuenca. In recent years, the gap has even increased, with visits to Toledo rising – especially in 2014 with the *Greco Year*, while those to Cuenca have slowed noticeably. Of the estimated 3.5 million tourists who visited Toledo in 2014, 810 990 stayed at least one night in a local hotel, which is 57.7 percent higher than overnight stays for one day in Cuenca. On the other hand, the average length of stay per visitor in Cuenca is usually somewhat higher, with 1.6 days per person compared to 1.5 days in Toledo (Table 4). In any case, Toledo is a mature tourist destination with international recognition and visibility while Cuenca lacks the notoriety that it deserves for its heritage resources. The gap between the two is very large and Cuenca will still have to work hard on the creation of tourism products and on the elaboration of a tourism marketing plan agreed upon and supported by all stakeholders.

*Table 4*

**Average length of stay of tourists between 2005 and 2015 (in days)**

| Year | Cuenca | Toledo | Castile-La Mancha region |
|------|--------|--------|--------------------------|
| 2005 | 1.60   | 1.56   | 1.73                     |
| 2006 | 1.60   | 1.62   | 1.73                     |
| 2007 | 1.65   | 1.60   | 1.76                     |
| 2008 | 1.67   | 1.62   | 1.80                     |
| 2009 | 1.68   | 1.57   | 1.78                     |
| 2010 | 1.62   | 1.56   | 1.76                     |
| 2011 | 1.56   | 1.55   | 1.75                     |
| 2012 | 1.51   | 1.49   | 1.68                     |
| 2013 | 1.57   | 1.51   | 1.68                     |
| 2014 | 1.65   | 1.51   | 1.65                     |
| 2015 | 1.65   | 1.50   | 1.66                     |

Source: Tourist Accommodation Occupancy Survey, National Statistical Institute

**Improving accessibility and expectations associated with HSR in terms of tourism development: disappointed expectations and ambivalent impacts**

In Toledo, the old train station, which dates from 1919 and it is located at the edge of the city, has been restored to cater for the HSR trains and the old conventional line has been dismantled. Before the HSR construction began in 2002, rail traffic between Madrid and Toledo in 2002 amounted to 874 336 travellers per year. This figure rose by 30% to 1 140 502 in 2006, the first full operational year of the HSR rail services after its opening in November 2005, and to 1 513 000 in 2009. Travel times were halved from 60 to 30 minutes, and neither private cars nor interurban buses could compete in terms of travel time, particularly during Madrid's peak hours (Guirao and Soler 2008).

In the case of Cuenca, the completion of the HSR line in December 2010 did not mean the disappearance of conventional trains and dual modes persisted. Moreover, the new high-speed station (Fig. 2), was located 5 km from the city centre. In 2011, just over 220 000 passenger trips were recorded on the HSR service – a modest beginning, but that number gradually

increased to almost 280 000 in 2013. Today, the main problem is the station's poor connectivity with Cuenca's other transport networks, which makes it difficult for it to become, in the short term, hub for local economic promotion (Ortuño-Padilla et al. 2014). Public transport access to the HSR station involves either taxis or buses, but the latter depart for the central bus station every 20 minutes and they take travellers on a circuitous route that lengthens the ride to 7 km, and an average time of 15 minutes for the full trip (Vázquez Varela and Martínez Navarro 2015). However, a clear improvement in Cuenca's connectivity with the two main cities of the Madrid-Levante HSR line – Madrid and Valencia – cannot be denied. The travel time on conventional trains between Madrid and Cuenca was of 3.5 hours, while that between Cuenca and Valencia was a little longer. Those times have been reduced to 55 and 58 minutes respectively.



**Fig. 2 – The HSR stations of Toledo (left) and Cuenca (right)**

Source: Adif Alta Velocidad (2016)

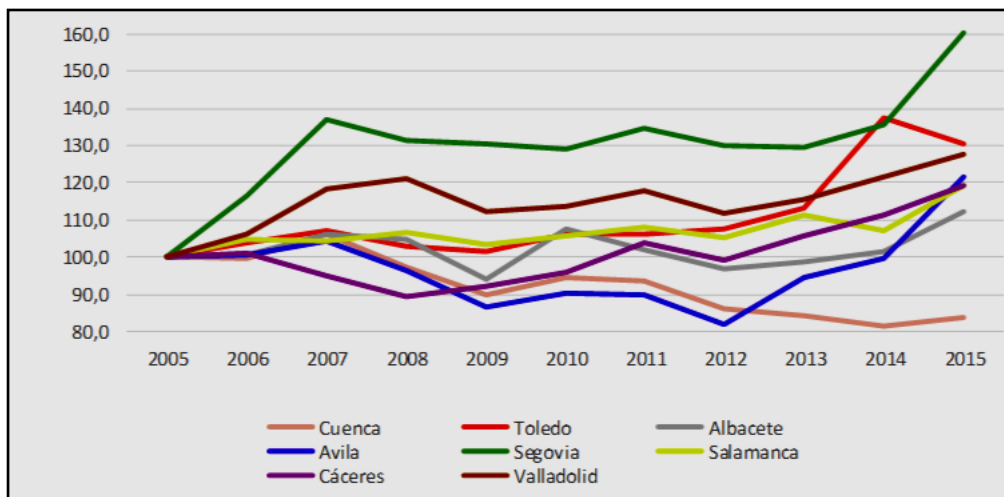
HSR transport services between Toledo and Madrid have encouraged daily commuting between the former and the latter, assisted by the purchase of monthly season tickets which are considerably cheaper than normal tickets which cost 12.9 € one-way. Also, on working days, tourists travelling in the opposite direction to Toledo help fill seats on the return journey. Thus the line accommodates 15 high-speed rail shuttles in both directions during working days and 10 at weekends. A survey conducted in 2007 revealed that from Monday to Friday 50% of trips have a work purpose, 30% are tourists and 8% students. Of the commuters with season tickets, 70% of them live in Toledo and only 20% are living in Madrid. Of the tourist trips on working days, 70% are not Spanish and usually buy their tickets in the origin train station on the same day of the trip (Guirao and Soler 2008).

The Cuenca HSR station is an intermediate one, so the line is used to connect the city with larger urban centres such as Madrid, Valencia, Seville (3 hours 20 minutes) and Alicante (1 hour 32 minutes). The line is provided with 28 daily HSR connections in different directions during working days and 21 on weekends. During working days, the reasons for travelling are mainly related to work, while during weekends and holiday periods the proportion of tourists increases. At present, most of the complaints about the service focus on the lack of season tickets associated with shuttle trains and schedules that do not allow early arrival in Madrid, Valencia and Albacete. However, it is possible to get great discounts in the case of early bird prices.

It is extremely difficult to quantify exactly the effect that HSR has had on the arrival of visitors and tourists to both Cuenca and Toledo. In order to search for more clear insights about this topic in other similar cities, we selected a sample of eight cities, five of them served by HSR (Toledo, Segovia, Valladolid, Cuenca and Albacete), while Ávila, Cáceres and Salamanca have no HSR access. These intermediate cities are located in the inland of the Iberian Peninsula and

they range between 72 and 300 kilometres from Madrid. They are all tourist destinations, but six of them are UNESCO World Heritage listed cities: Toledo, Ávila, Segovia, Salamanca, Cáceres and Cuenca. Albacete and Valladolid are destinations for what one might term urban tourism. Data on travellers and overnight stays in hotels (Fig. 3, Fig. 4) provides us with eight tourist destinations whose recent evolution has been completely different.

Segovia has undergone the most favourable increase in its tourist traffic, followed by Toledo and Valladolid at some distance behind. Their HSR stations opened between 2005 (Toledo) and 2007 (Segovia and Valladolid). In this sense, the cities that get the best scores seem to confirm the thesis that the arrival of the HSR to a city seems to boost the tourist flows, although the times and the scores do not always correlate exactly. However, the three cities that follow them in scoring, Ávila, Salamanca and Cáceres, lack a high-speed railway station, which has not prevented them from showing positive trends or that Salamanca is the city with the largest number of travellers staying in hotel establishments of the entire selected sample. Finally, Albacete and Cuenca close the list of the obtained scores. They were incorporated into the high-speed network in 2010, but, despite this, they have not managed to keep pace with competitors still lacking a HSR station.



**Fig.3 - Travellers in hotel establishments between 2005-2015 (on an index base 2005 = 100)**  
 Source: Tourist Accommodation Occupancy Survey, National Statistical Institute

If we go back to our two case studies (Table 5), Toledo recorded a steady growth in the number of travellers, with a slight decrease in the early years of the economic crisis (2008 and 2009) and a spectacular jump after 2013. In contrast, the crisis helps explain the continued decline of tourists and the overnight stays during the same period in Cuenca, a situation that the arrival of HSR failed to reverse. So the evolution of Cuenca's tourist numbers reflects the average of the region to which it belongs, a territory of markedly rural characteristics. It therefore seems clear that the development of HSR has had two quite different effects on our two case study locations. Likewise, the proximity of nearby Madrid, which is either a source of day-trippers or the starting point for numerous possible routes linking World Heritage destinations, has different effects on the two locations.

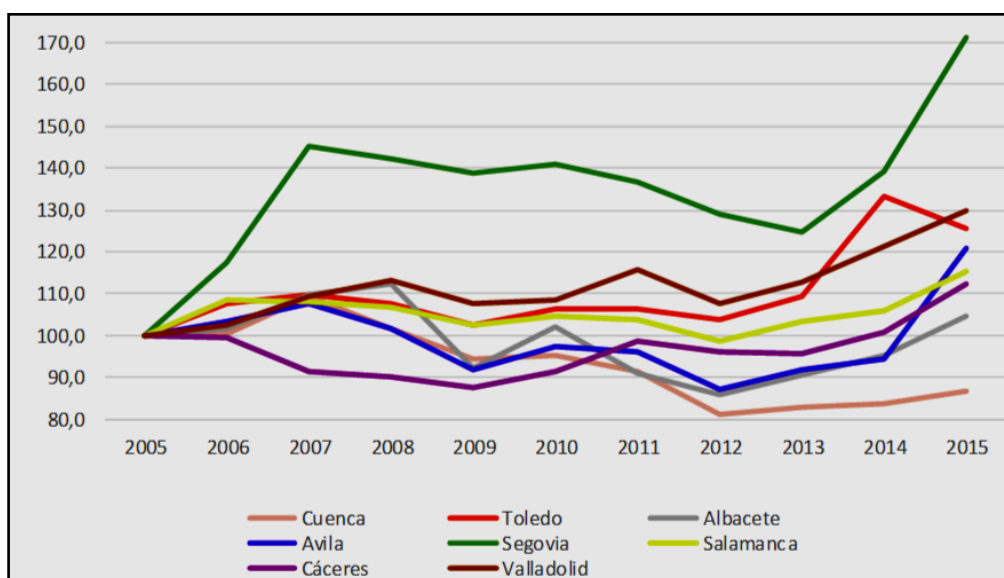


Fig.4 - Overnight stays by travellers between 2005-2015 (on an index base 2005 = 100)  
Source: Tourist Accommodation Occupancy Survey, National Statistical Institute

Table 5

Travelers in hotel establishments and overnight stays by travellers between 2003 and 2015 (absolute data)

| Year | Travellers in hotel establishments |         |                          | Overnight stays by travellers |         |                          |
|------|------------------------------------|---------|--------------------------|-------------------------------|---------|--------------------------|
|      | Cuenca                             | Toledo  | Castile-La Mancha region | Cuenca                        | Toledo  | Castile-La Mancha region |
| 2003 | 174 913                            | 375 985 | 1 788 369                | 286 530                       | 575 804 | 3 013 400                |
| 2004 | 203 019                            | 412 495 | 1 899 183                | 327 912                       | 639 269 | 3 209 495                |
| 2005 | 209 196                            | 434 615 | 1 982 708                | 335 417                       | 677 065 | 3 438 796                |
| 2006 | 208 923                            | 450 669 | 2 084 181                | 335 847                       | 729 706 | 3 618 422                |
| 2007 | 222 182                            | 465 418 | 2 187 095                | 367 153                       | 742 054 | 3 847 538                |
| 2008 | 203 849                            | 448 007 | 2 117 135                | 340 887                       | 728 138 | 3 807 440                |
| 2009 | 188 093                            | 441 644 | 1 970 296                | 316 474                       | 694 483 | 3 518 963                |
| 2010 | 197 584                            | 460 795 | 1 969 158                | 318 527                       | 719 281 | 3 479 503                |
| 2011 | 196 179                            | 462 063 | 1 911 229                | 306 060                       | 718 745 | 3 352 303                |
| 2012 | 179 893                            | 468 633 | 1 764 436                | 272 480                       | 700 796 | 2 974 774                |
| 2013 | 176 427                            | 491 362 | 1 743 486                | 276 947                       | 738 586 | 2 933 088                |
| 2014 | 170 192                            | 596 980 | 1 908 864                | 281 198                       | 902 451 | 3 173 960                |
| 2015 | 175 654                            | 566 977 | 1 963 232                | 290 852                       | 849 132 | 3 269 043                |

Source: Tourist Accommodation Occupancy Survey, National Statistical Institute

In parallel with a progressive increase in tourists, Toledo has experienced a significant growth and major renovation of its hotel infrastructure with the opening of three, four and five star

hotels located on the edge of the historic city centre and the access routes to the city. In particular, the increase in the supply of medium and high categories has been significant (Table 6). On the other hand, the recovery of old manor houses and the demand from visitors for staying in "charming places" have fostered the opening of new small hotel establishments in the historical district, providing the city with a wide range and affordable supply for all kinds of travellers. It is difficult to prove whether the construction or refurbishment of hotels precedes or it follows the increase of tourists, as well as whether the construction is demonstrably affected by the arrival of HSR. The new hotels of high categories were built and opened between 2006 and 2007, while several hotels of four stars were refurbished and completed between 2006 and 2009. The dates overlap with the four years following the arrival of the high-speed train (2005), but also with the last years of the financial-real estate boom in Spain. After the outbreak of the economic crisis, and despite the fact that the number of travellers has continued to increase, the opening of new hotel establishments has stagnated so far.

Table 6

**Evolution of hotel accommodation by category and number of hotel beds (2003-2016)**

|               | Category          | Hotel establishments |           | Number of hotel beds |              |
|---------------|-------------------|----------------------|-----------|----------------------|--------------|
|               |                   | 2003                 | 2016      | 2003                 | 2016         |
| <b>CUENCA</b> |                   |                      |           |                      |              |
|               | Five stars hotel  |                      |           |                      |              |
|               | Four stars hotel  | 3                    | 5         | 509                  | 737          |
|               | Three stars hotel | 3                    | 5         | 386                  | 467          |
|               | Two stars hotel   | 3                    | 3         | 162                  | 141          |
|               | One star hotel    |                      |           |                      |              |
|               | Two stars hostel  | 7                    | 16        | 305                  | 464          |
|               | One star hostel   | 2                    | 3         | 30                   | 76           |
|               | Guesthouse        | 1                    | 3         | 30                   | 62           |
|               | <b>Total</b>      | <b>19</b>            | <b>35</b> | <b>1 422</b>         | <b>1 947</b> |
| <b>TOLEDO</b> |                   |                      |           |                      |              |
|               | Five stars hotel  |                      | 3         |                      | 424          |
|               | Four stars hotel  | 5                    | 9         | 1 108                | 1 693        |
|               | Three stars hotel | 12                   | 15        | 1 010                | 1 549        |
|               | Two stars hotel   | 7                    | 7         | 278                  | 278          |
|               | One star hotel    | 1                    | 1         | 36                   | 36           |
|               | Two stars hostel  | 16                   | 21        | 411                  | 500          |
|               | One star hostel   | 4                    | 4         | 67                   | 67           |
|               | Guesthouse        | 2                    | 1         | 19                   | 7            |
|               | <b>Total</b>      | <b>47</b>            | <b>61</b> | <b>2 929</b>         | <b>4 554</b> |

Source: Hotel Accommodation Official guide and Turespaña

### **HSR trains and tourism in Cuenca and Toledo: renewed image and coordination tool**

The contribution of HSR to both cities in terms of image enhancement is undeniable. Both cities have significantly improved their accessibility in time and quality of service, especially in the case of Cuenca, where, in addition to a reduction of more than 65% of travel time to Madrid, we can add its direct connection with 11 other HSR cities included within the network. On the other hand, this image effect has also been associated with a "club" policy under the name *Avexperience* offering combined packages for each destination, including train tickets plus hotel at very competitive prices. However, again in this case, it does not appear that the image

enhancement has resulted in both cases in a growing tourist flow.

The collective strategies of the various stakeholders in both cities have shown very different levels of effectiveness. Stakeholders include railway operators, promoters of business tourism, and operators in the entertainment and cultural sectors – whether public, private or non-profit. In the past, both cities have tested new models of heritage and tourism management as evidenced by the creation of various institutions such as separate Consortia and Convention Bureaux in both Toledo and Cuenca. Both cities have produced planning documents: *Cuenca Tourism Promotion Plan 1998-2001*; *Toledo Plan for Tourist Excellence 2000-2002*; and *Toledo Quality Tourist Destination Plan*. However, their ability to engage all stakeholders and to arouse the support of various institutions has been different, as clearly demonstrated by the recent dissolution of the *Cuenca Tourism Foundation*, after 12 years of work between 2004 and 2016.

Undoubtedly, the city of Toledo has benefited from its higher profile as a tourist destination for decades. We must add to this its ability to promote the provincial capital as a business tourism destination for congresses and meetings. The new "El Greco" Convention Centre was opened in 2012. Its capacity to expand and diversify cultural and leisure activities created such new projects as the *Greco year 2014*, and such important exhibitions as *El griego de Toledo*, and *El Greco y su taller: arte y oficio*, which had great public success. Its ability to create new tourism products and to attract more visitors is aided by the city's ability to link it with HSR, as occurred with the development of the *Spanish Gastronomy Capital* theme in 2016. The city has also worked with the HSR operator to design and promote travel or tour packages based, for example during the *Greco year 2014*, on direct connections to Barcelona, Malaga and Seville.

The city of Cuenca has its own features, which clearly differ from those of Toledo. Thus, the HSR service has improved the image of the city and its attractiveness by asserting its identity and, thereby, enabling it to develop its tourist attractions with a higher degree of visibility as a tourist destination in both national and international arenas. But the impact has been much smaller than that of Toledo. Efforts to give the city a Convention Centre have been crippled by the global financial crisis, so that attempts to promote the city as a business tourism destination are restricted by the limitations of the existing infrastructure that can only serve small business meetings, incentive trips and minor conferences. Attempts to expand and diversify the city's cultural and leisure opportunities were only implemented in 2016, much behind Toledo. This entailed developing new cultural projects that seek to break seasonality and also attract more visitors by linking their promotion with the presence of HSR. Thus an exhibition entitled *Ai Weiwei. La poética de la libertad*, which opened between July and December in the gothic cathedral of Cuenca, was packaged with HSR tickets and hotel accommodation, thereby combining the efforts of several stakeholders. Data collected from January to December seem to show an increase of 13% both in the registered number of tourists and overnight stays compared with the same period the previous year, suggesting that HSR is a necessary, but not sufficient, element in developing tourism.

### Conclusions

Most scholars agree that it will take some time to understand the development effects of commissioning and implementing new infrastructure (Bellet et al. 2010, Bellet Sanfeliu 2013). A revolution in mobility practices, defined by modal shifts and induced traffic (Menéndez et al. 2016), follows immediately the deployment of these services. Nevertheless, the impact of these new practices on the socio-economic dynamics may take much longer. The French academic literature, which already has great experience on the subject, suggests that we have to wait 20 years to assess the new socio-economic dynamics and spatial impact that can be generated with the implementation of a new infrastructure such as HSR trains (Klein and Million 2005). Obviously, taken together, the time required testing the effects of HSR in the territory, coupled

with the economic crisis that has been going on for more than eight years, have complicated the possibilities of obtaining conclusive results.

However, the HSR can become a dynamic tool where there is a strong governmental guidance and leadership at city and territory level, while stakeholders are collectively able to define strategies needed to adapt the infrastructure to enhance the tourist experiences (Bellet Sanfeliu 2013, Bellet et al. 2016). The transformation of public images of city or territory accessibility is immediate and it occurs mostly with the new infrastructure's opening. Places suddenly become more accessible and more likely to be explored. The city that hosts the new infrastructure gets more visibility and opportunities to promote itself. The HSR adds an air of modernity to the city where it operates, a collective illusion that should not be wasted (Paül i Agusti 2009), since following the changes of accessibility of the served territories, the involved actors are expecting economic dynamism in general and tourism in particular. However, the automatic nature of the effects of transport infrastructures on local economic development, commonly known as a "structuring effect", is largely a myth (Offner 1993).

The arrival of HSR certainly had immediate effects on many aspects of life and society of the two selected cities, although most diagnoses agree on the fact that tourism, accommodation and catering industries were likely to benefit most from its development. However, tourism is a multi-faceted and highly differentiated good – depending on location – and we should both broaden and deepen the research field by researching numbers of tourist visitors, the development of tourist service companies, changes in the number of conferences and meetings, changing employment in the tourism sector – including the number and types of jobs, revealed preference surveys among tourists, and so on. More accurate and conclusive data of these kinds can help each city in defining, implementing and revising their own tourism strategies.

Our Spanish study has shown that it is difficult to quantify the impact of HSR on tourism, but the opportunity to compare cities with and without HSR allows us to separate the HSR effects from other factors. In this sense, it is evident that from the mentioned sample of eight cities, the three that have grown the most in visitors have been Segovia, Toledo and Valladolid, all three with HSR station but with very different tourist resources. Segovia and Toledo are heritage cities, with a highly defined profile of cultural tourism. However, Valladolid has had to invest and bet on other complementary tourism products such as wine tourism, gastronomy and cultural events and congresses. The three cities that score in the middle area of the table, Ávila, Salamanca and Cáceres also correspond to the profile of heritage cities, whose tourist resources are important enough and have sufficient visibility to increase the flows of visitors despite lacking connection to the HSR network. Finally, Albacete and Cuenca, with the worst data of growth in terms of visitors housed in hotel establishments, joined the HSR network somewhat later and with very different profiles and resources. At least partial confirmation for our conclusions is to be found in the findings of other investigations. Albaladejo (2015) argue that the number of tourists grew faster in recent years in destinations (Spanish provinces) not connected to the HSR network than in destinations connected to it, indicating that factors other than the availability of this service may have significant influence on tourist attraction. Among intermediate cities, only those pre-equipped with good tourist amenities enjoyed significant impacts.

Another aspect that should have an impact on tourist flows, which is repeatedly assessed in the academic literature, concerns HSR stations located peripherally to cities. Many scholars argue that peripheral HSR stations tend to give poorer results in terms of traffic and services. However, this condition has had little effect on a major tourist destination like Segovia where the high-speed station is 6 km far from the city centre and the evolution of tourist flows, despite the slight decrease during the hardest years of the economic crisis, has been especially

positive. This view is substantiated to some extent by Cuenca, whose high-speed station is 5 km away from the city centre. Its fall in the number of visitors during the years of the financial crisis and the modest recovery in numbers since 2014 cannot be due exclusively to the location of the HSR infrastructure.

Another conclusion from this study of the relationship between tourism and HSR in World Heritage Cities, especially Toledo and Cuenca, is that their experiences differ considerably, and they demand the understanding of their contexts (Delaplace et al. 2014a). HSR and its effects cannot be understood independently of the socio-economic and territorial characteristics of the served areas, whether we focus on tourism or other industries (Delaplace et al. 2014a). Once again, we're back to complexity, circularity, uncertainty and so on. The analysis of the available experience shows that the availability of HSR gives value to already known and popular tourist destinations but it is not sufficient on itself to promote further development (Albalate et al. 2015). In short, infrastructures are necessary but not sufficient for socio-economic development, specifically tourism, and their effectiveness depends on a many accompanying conditions. Elapsed time since the opening of an HSR station may also be a differentiating factor on a place's capacity to attract tourists. Toledo's HSR station opened in 2005 and Cuenca's in 2010. Another factor affecting outcomes is the capacity of local actors to work collectively to develop, fund and implement strategies to improve tourist products. And 'intermediate cities' of the kinds discussed here have to confront the reality of increased spatial competition for visitors, regionally, nationally and internationally due to improved transport access.

The HSR contributes towards putting the city on the tourist map and it increases the tourist awareness of the destination. As a result, urban tourism could register a significant increase. Nevertheless, this growth is not only related to the HSR and to hospitality infrastructure development; it is also the result of the capacity for coordination and organization followed by an aggressive promotion and communication strategy.

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#### Annex

##### Travellers in hotel establishments by year (2005-2015) (Absolute data)

In Bold and *Italic*, the years served by the HSR after the opening of the HSR line and station

|             | Cities with high-speed railway lines and stations |                |                |                |                | Cities without high-speed railway lines and stations |           |         |
|-------------|---|----------------|----------------|----------------|----------------|--|-----------|---------|
|             | Cuenca  | Toledo         | Albacete       | Segovia        | Valladolid     | Ávila  | Salamanca | Cáceres |
| <b>2005</b> | 209,196   | <b>434,615</b> | 157,233        | 160,539        | 298,559        | 225,627  | 554,007   | 224,707 |
| <b>2006</b> | 208,923   | <b>450,669</b> | 157,799        | 187,302        | 317,406        | 226,457  | 581,040   | 226,977 |
| <b>2007</b> | 222,182   | <b>465,418</b> | 166,731        | <b>219,805</b> | <b>353,610</b> | 235,468  | 576,890   | 213,384 |
| <b>2008</b> | 203,849   | <b>448,007</b> | 164,477        | <b>210,931</b> | <b>361,913</b> | 217,363  | 590,588   | 201,185 |
| <b>2009</b> | 188,093   | <b>441,644</b> | 148,227        | <b>209,561</b> | <b>335,031</b> | 194,964  | 571,932   | 206,975 |
| <b>2010</b> | <b>197,584</b>                                    | <b>460,795</b> | <b>169,209</b> | <b>207,473</b> | <b>338,967</b> | 203,625  | 584,768   | 215,489 |
| <b>2011</b> | <b>196,179</b>                                    | <b>462,063</b> | <b>160,258</b> | <b>216,054</b> | <b>352,301</b> | 203,231  | 597,588   | 233,052 |
| <b>2012</b> | <b>179,893</b>                                    | <b>468,633</b> | <b>152,292</b> | <b>208,845</b> | <b>333,342</b> | 184,957  | 583,981   | 223,071 |
| <b>2013</b> | <b>176,427</b>                                    | <b>491,362</b> | <b>155,270</b> | <b>208,014</b> | <b>344,647</b> | 212,833  | 615,532   | 237,166 |
| <b>2014</b> | <b>170,192</b>                                    | <b>596,980</b> | <b>159,591</b> | <b>217,465</b> | <b>363,550</b> | 224,659  | 592,646   | 250,582 |
| <b>2015</b> | <b>175,654</b>                                    | <b>566,977</b> | <b>176,385</b> | <b>257,441</b> | <b>380,553</b> | 274,123  | 660,668   | 267,807 |

Source: Tourist Accommodation Occupancy Survey, National Statistical Institute  
**Overnight stays by travellers between 2005 and 2015 (Absolute data)**  
 In Bold and *Italic*, the years served by the HSR after the opening of the HSR line and station

|             | Cities with high-speed railway lines and stations |                |                |                |                | Cities without high-speed railway lines and stations |           |         |
|-------------|---|----------------|----------------|----------------|----------------|--|-----------|---------|
|             | Cuenca  | Toledo         | Albacete       | Segovia        | Valladolid     | Avila  | Salamanca | Cáceres |
| <b>2005</b> | 335,417   | <b>677,065</b> | 257,599        | 238,090        | 508,531        | 349,341  | 922,573   | 374,069 |
| <b>2006</b> | 335,847   | <b>729,706</b> | 261,966        | 279,581        | 521,065        | 360,991  | 998,565   | 372,323 |
| <b>2007</b> | 367,153   | <b>742,054</b> | 282,178        | <b>346,014</b> | <b>555,637</b> | 376,031  | 996,131   | 342,242 |
| <b>2008</b> | 340,887   | <b>728,138</b> | 289,260        | <b>338,636</b> | <b>574,875</b> | 354,540  | 984,668   | 336,968 |
| <b>2009</b> | 316,474   | <b>694,483</b> | 237,161        | <b>329,888</b> | <b>548,044</b> | 320,307  | 943,807   | 326,971 |
| <b>2010</b> | <b>318,527</b>                                    | <b>719,281</b> | <b>262,309</b> | <b>335,424</b> | <b>551,416</b> | 340,078  | 965,878   | 341,573 |
| <b>2011</b> | <b>306,060</b>                                    | <b>718,745</b> | <b>234,492</b> | <b>325,561</b> | <b>587,373</b> | 335,541  | 957,292   | 368,701 |
| <b>2012</b> | <b>272,480</b>                                    | <b>700,796</b> | <b>220,618</b> | <b>306,758</b> | <b>547,562</b> | 303,550  | 910,892   | 358,551 |
| <b>2013</b> | <b>276,947</b>                                    | <b>738,586</b> | <b>232,795</b> | <b>296,934</b> | <b>572,341</b> | 320,074  | 953,502   | 357,326 |
| <b>2014</b> | <b>281,198</b>                                    | <b>902,451</b> | <b>245,183</b> | <b>331,601</b> | <b>616,503</b> | 329,442  | 975,095   | 376,418 |
| <b>2015</b> | <b>290,852</b>                                    | <b>849,132</b> | <b>269,623</b> | <b>407,198</b> | <b>659,155</b> | 422,676  | 1,062,327 | 419,975 |

Source: Tourist Accommodation Occupancy Survey, National Statistical Institute

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## THE STATE OF GREEN SPACES IN KUMASI CITY (GHANA): LESSONS FOR OTHER AFRICAN CITIES

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**Abstract:** Integrating green spaces such as parks and gardens into the physical landscape of cities has been identified to enhance the health and wellbeing of urban dwellers. This paper assesses the state of green spaces in Kumasi city (Ghana), once known as the garden city of West Africa. Using a case study approach, a mixture of qualitative research techniques were employed whilst a set of eight themes were put together to guide the assessment. In all, green spaces were found to be in poor state. With the exception of conservation and heritage theme, the remaining seven themes that were used for the assessment all found the green spaces to be in poor state. It is therefore recommended that there should be an attitudinal change towards the maintenance of green spaces, the application of a collaborative governance approach, and priority giving to green spaces in all development agendas by city authorities.

**Key Words:** *green spaces, urban landscape, urban quality of life, Kumasi, Ghana, Africa.*

### Introduction

Urban areas are the fastest growing land cover type in the world. Small cities are becoming big whilst the number of megacities (cities with more than 10 million inhabitants) has increased nearly 10-fold since 1950 (United Nations 2008). With more than half of the world's population living in urban areas since 2008, future projections show that this trend will continue with Africa and Asia having the highest rate of urbanisation in the next four decades (Fuller and Gaston 2009, United Nations 2012). The rapid rate of urbanisation in the world coupled with over concentration of many activities in urban areas is now having devastating effects on the urban natural environment especially on urban green spaces (Baycan-Levent and Nijkamp 2009, Laforteza et al. 2009, Cobbinah and Darkwah 2016). These urban green spaces consist of all public and private open spaces in urban areas, mostly covered by vegetation which are directly (e.g. active or passive recreation) or indirectly (e.g. positive influence on the urban environment) available for use (URGE-Team 2004). Examples of these spaces include public parks, gardens, playing fields, outdoor sports areas, urban trees, and allotments.

The benefits that green spaces offer to the development of cities cannot be over emphasized. A well planned and managed urban green space shows the proper functioning of cities and it also enhances the identity, livability and health condition of cities (Baycan-Levent and Nijkamp 2009). It has also been established that a city that has good designed green spaces epitomises good planning and management, a healthy environment for humans, vegetation and wildlife populations, and furthermore bestows pride on its citizenry and government (Adams and Leedy 1987, Johnston 1990, Godefroid 2001, Jim 2004). According to Ebenezer Howard through his garden city model, a city with many green spaces offers opportunities to enhance the social wellbeing and recreational activities of city dwellers through frequent contact with such spaces (Howard 1902).

Despite the numerous benefits that these spaces offer to support the development of cities and the wellbeing of urban dwellers, studies have shown that most of these spaces in the global

south are fast disappearing (Singh et al. 2010, Gomes and Moretto 2011, Cobbinah and Darkwah 2016). The exigencies of addressing poverty, providing the basic needs and other pressing human needs often overshadow the environmental concerns of many countries in the global south, especially those in Africa (Marcotullio 2001, Bolnick et al. 2006). In some African countries such as Nigeria, Senegal, Sierra Leone, Cote D'Ivoire and Ghana, studies show that green spaces are not much valued as they are often cleared to make way for many human activities (Abegunde et al. 2009, Fuwape and Onyekwelu 2011, Adjei Mensah 2014a). As a result of this, green spaces now occupy a small proportion of the landmass of many urban areas in Africa. For instance, a study by MacConnachie et al. (2008) in South Africa found green spaces occupying less than 10 per cent of the land area of several towns. In Lagos (Nigeria), it has been revealed that less than 3 per cent of the total land of the city is now covered by green spaces (Oduwaye 2013). Furthermore, in cities such as Cairo and Alexandria (Egypt), Luanda (Angola), Mogadishu (Somalia), Monrovia (Liberia), and Kumasi and Accra (Ghana), green spaces in a form of public parks and gardens cover insignificant proportion of the total landmass (Economist Intelligence Unit 2011, Adjei Mensah 2014a).

This deteriorating condition of green spaces in many African cities is happening at a time where there is much emphasis on concepts such as sustainable urban development and resilient cities which strongly support the integration of green spaces into city's physical landscape (Jabareen 2006, Desouza and Flanery 2013). This makes researching into the state of green spaces in the context of Africa critical and tenable to find possible ways to improve the declining condition of such spaces. But regrettably there is a paucity of studies on the state of green spaces in Africa. Previous studies have broadly looked at green spaces from the perspective of urbanisation, climate change and the role of such spaces in urban development without paying particular attention to their state especially in the context of Africa where such spaces are under severe threat (MacConnachie et al. 2008, Abegunde et al. 2009, Rabare et al. 2009, Ward et al. 2010, Kithiia and Lyth 2011, Cobbinah and Darkwah 2016). It was therefore to bridge this knowledge gap that this study was undertaken using Kumasi city in Ghana, which was once the garden city of West Africa as a case study.

The aim of this paper is to assess the state of urban green spaces in Kumasi and to draw key lessons to enhance the situation in the city and other African cities. The state of green spaces in this paper refers to the overall condition of green spaces in a given area by looking at a variety of themes or variables to draw conclusions. The paper makes significant contributions in different ways. First, it brings out some of the hidden issues behind the current state of urban green spaces in Africa for policy makers and city authorities to take informed decisions on them. Second, it provides an assessment framework on the state of urban green spaces which can be replicated in the context of Africa and elsewhere. It also highlights the relationships of some themes or variables associated with the state of green spaces and how poor attention to such relationships can have consequences on the overall state of green spaces.

### **Theoretical perspective: Ideal green spaces**

There is a growing debate on what factors or themes should be used to assess the state of green spaces. One group of scholars believed in using solely quantitative means to assess the state of green spaces (Kuchelmeister 1998, Fraser 2002, Barbosa et al. 2007, Wang 2009). Their reason is based on the fact that this approach helps to know the total amount of green spaces available for each individual within a given area and also to quantify the total green space land area required to satisfy the needs of a group of people. Green space per capita (normally in square metres "m<sup>2</sup>"), time and distances to green spaces often serve as major indicators for this group of scholars. Based on this idea, the World Health Organisation (WHO) and the Food and Agricultural Organisation (FAO) recommend a minimum of 9 m<sup>2</sup> of green space per city dweller as appropriate for urban areas (Kuchelmeister 1998). Sukopp et al. (1995) and Wang (2009) have observed that the green space standard that many countries in

the global north tend to adopt fall within 20 m<sup>2</sup> of park area per capita. The European Environmental Agency recommends that for a green space to be in good state urban residents should have access to urban green spaces (e.g. urban parks) within a walking distance of 15 minutes, which is approximately 900 metres (Barbosa et al. 2007). A standard of 10 m<sup>2</sup> green space per urban dweller is also recommended in Bangkok (Fraser 2002). Critics of this quantitative approach have raised concerns about it being too narrow, rigid, and over-emphasizing on only access to green spaces without given attention to other essential features that also contribute to enhancing the state of green spaces (Centre for Urban & Regional Ecology 2002, Pauleit et al. 2003).

Contrary to the quantitative school of thought is another group of scholars who believed that taken into account the broad nature of green spaces, a blend of qualitative and quantitative features or themes have to be looked at in order to appropriately assess the state of green spaces. Among this group of scholars are Williams and Green (2001) who have found out that an ideal urban green space should have the following qualities: cleanliness, safety, accessibility and quietness. A study in UK by Dunnet et al. (2002) showed various characteristics that a good conditioned urban green space should have. These characteristics included availability of recreational facilities (e.g. sports facilities), good access, comfort (e.g. toilet, seats and shelter), natural element (wildlife, vegetation etc.), presence of staff and inclusiveness. Gobster and Westphal (2004) pointed out cleanliness, naturalness, aesthetics, safety, access and appropriateness of development as among the characteristics that an urban green space (such as parks, gardens and play grounds) which is in good state should possess. Community involvement in planning, user satisfaction, equitable access, marketing, conservation and heritage, and safety have been observed to also be some of the key features of good conditioned urban green spaces (Harnik 2004, Plymouth City Council 2009). The Green Flag Award which is a pristine award given to parks and other green spaces that are in good condition and well managed in UK has the following as its criteria: cleanliness, maintenance, facilities, care of historical heritage, environmental sensitivity management, community participation, good management plan, conservation and attractiveness (The Urban Green Spaces Taskforce 2002). Looking at the above two broad views on the state of green spaces it can be said that assessing the state of green spaces is quite cumbersome as there is no universally accepted criteria to follow. However, in doing this one has to be more cautious and look at a range of themes (both quantitative and qualitative in nature) that broadly look at green spaces from different perspectives to make the assessment more comprehensive.

Relying on the ideas from the literature, a set of 8 themes was put together to assess the state of green spaces in Kumasi. These themes included accessibility, attractiveness, comfort, safety, conservation and heritage, maintenance, publicity, and community participation. They were adapted due to their broad scope in covering a wider spectrum of issues surrounding the development of green spaces and the vital role that each of them plays to enhance the state of green spaces. The selected themes were therefore used to develop a model to structure the investigations and the subsequent analysis in this paper (Fig. 1).

### **Materials and Methods**

The study was undertaken in Kumasi, the second city of Ghana. The rationale for selecting Kumasi was that it represents most of the issues facing urban green spaces in Africa such as rapid depletion of green spaces and unsustainable nature of these spaces (Adjei Mensah 2014b). Kumasi was built on the garden city model that supports the incorporation of many green spaces into cities physical landscape (Adarkwa and Owusu-Akyaw 2001, Quagraine 2011). The 1945 city plan of Kumasi, the Kumasi Planning Scheme between 1963 and 1988, and other planning schemes that underlie the physical development of Kumasi dedicated substantial part of the city's landmass to green spaces (Quagraine 2011). In 1960's, the city gained the accolade "the Garden city of West Africa" mainly because of the presence of many

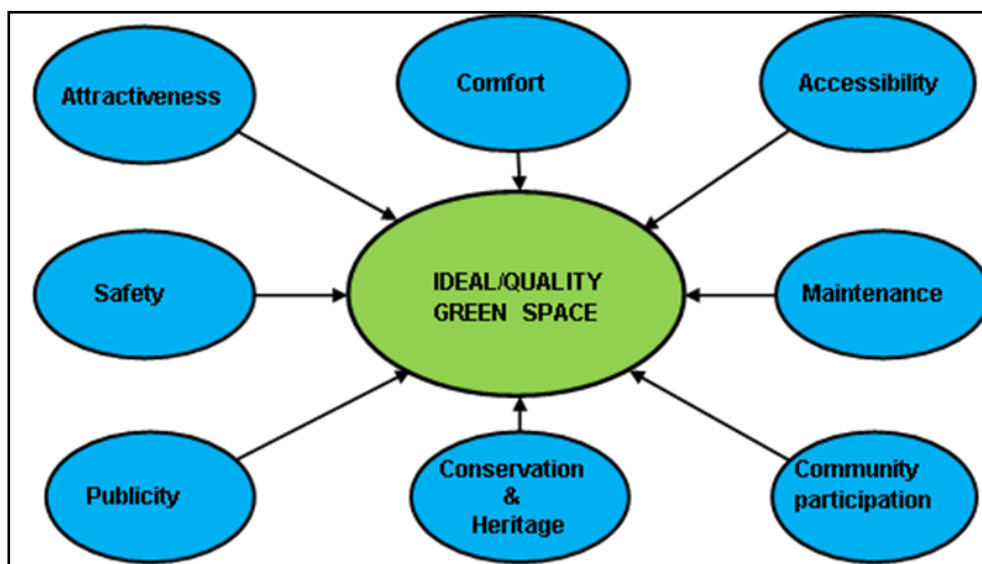


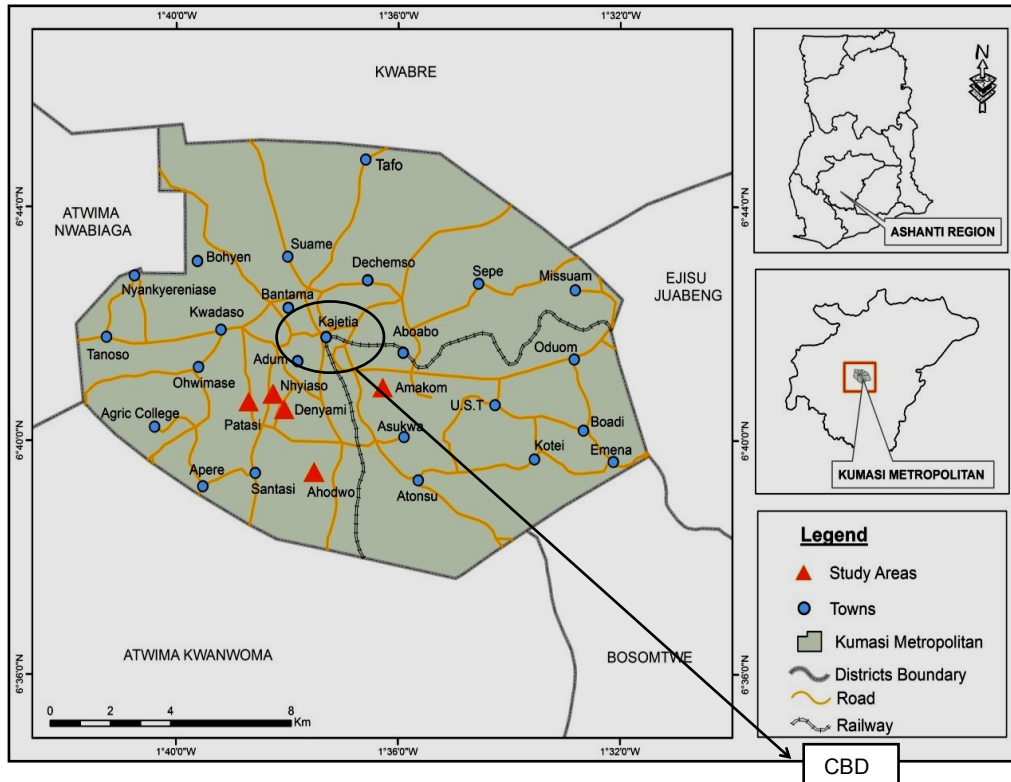
Fig. 1 – Themes for assessing the state of green spaces  
 Source: Authors construct (2014)

well planned green spaces interspersing with physical land developments (Geurts 2009, Quagraine 2011). During that period over 60 per cent of the land area of the city was covered with green spaces, but since 2005 concerns have been raised about the city losing most of its green spaces (Tontoh 2011).

The city has a total population of just over 2 million making it the second largest city in Ghana (Ghana Statistical Service 2012). Kumasi falls within the moist semi-deciduous vegetation zone of Ghana which has favourable soil conditions that support farming and green vegetation. Five neighbourhoods (Patasi, Danyame, Ahodwo, Nhyiaso and Amokom) were selected for the study (Fig. 2). This was done in consultation with the Department of Parks and Gardens, the official body in charge of green spaces in Kumasi. They were selected on the basis that they harbour most of the green spaces in Kumasi and they are well noted for their greenery. In addition to this, the green spaces in the central business district and other vantage points were used as another case.

A combination of descriptive and explanatory case study approaches was used in the study. This enabled the study to describe the state of urban green spaces of Kumasi in their natural context and it gave possible explanation for such condition (Yin 2003, Hancock and Algozzine 2006). The study was purely qualitative and this was due to the nature of the study which demanded much information to know the true state of green spaces in Kumasi. In view of that it made use of a blend of qualitative methods such as in-depth interviews, focus group discussions, personal observations, and documentary and archival data, as recommended by Yin (2003). Four categories of people constituted the study's target population. These were the residents of the selected neighbourhoods, city authorities, opinion leaders and officials of allied bodies on green spaces. The selection of the respondents was based on theoretical or purposive sampling technique (Mills et al. 2010). They were selected based on the roles they play on green spaces. The city authorities serve as policy makers on green spaces, the allied bodies on green spaces manage these spaces whilst opinion leaders and the residents serve

as users of the green spaces. In all, 30 in-depth interviews were conducted for key informants which included opinion leaders, city authorities, and representatives of allied bodies on green spaces. Almost all the key informants had tertiary educational background with some having Higher National Diploma (HND), university degree, and master's qualifications. They fell within middle and high income category, and were mostly professionals holding reputable positions in government and private institutions.



**Fig. 2 – Kumasi city and the selected sites for the study**

Source: Department of Geography and Regional Planning, University of Cape Coast (2013)

Aside the in-depth interviews, 10 focus group discussions (FGDs) were undertaken in the five (5) selected neighbourhoods. In each of the five (5) neighbourhoods, two (2) focus group discussions were done, one for the youth (18-45 years old) and one for the elderly (46 years old and above). This was done to get the views and experiences of both the young and the old on green spaces in order to draw informed conclusions. Each of the focus groups had participants ranging from 7 to 10. The participants of the FGDs who were residents of the selected neighbourhoods largely had basic and high school educational qualifications. They were mainly low income earners who engage in petty trading and artisanal jobs such as dress making, carpentry, plumbing and bakery. The differences in socio-economic background of the respondents (the residents and key informants) made them not to have the same value for green spaces. Numerous personal observations sessions were also undertaken on various green spaces to have first-hand information about the state of those spaces. For clarity and easy assessment, the eight (8) adapted themes already mentioned above were further

operationalised to come up with specific indicators to suit the African context (the situation in Ghana) and also to guide the study (Table 1).

Table 1

**Indicators to assess the state of green spaces**

| THEME                     | INDICATOR  |
|---------------------------|--|
| Attractiveness            | Presence of signage, well grown grasses, walkways, free from litter and animal fouling, availability of dustbins, absence of unpleasant smell  |
| Comfort                   | Availability of seats, playing facilities, toilet facilities<br>Serene environment   |
| Accessibility             | Enough availability of green spaces (minimum of 9 m <sup>2</sup> green space per city dweller as recommended by WHO)<br>Proximity to green spaces (public parks and gardens) of at least 20 minutes' walk to a public park or garden |
| Safety                    | Free from vandalism, criminal attacks<br>Not used as hide outs for criminals<br>Availability of first aid, availability of lights at night   |
| Conservation and heritage | Availability of historical/cultural artefacts on green spaces<br>Variety of plant and animal species   |
| Maintenance               | Absence of spoilt facilities<br>Facilities functioning for their purpose<br>Regular mowing of grasses and shaping of trees and flowers   |
| Publicity                 | Promoting or marketing green spaces through mediums such as print and electronic media, leaflets, and websites to attract visitors and educate them as well  |
| Community participation   | Involving neighbourhood residents in green space conservation activities such as tree planting exercise and community gardening  |

Source: Author's fieldwork (2013)

### Results and Discussion

This section critically discusses the state of green spaces, it show the importance of the themes that were used for the assessment and it brings out the association or relationships that were found to exist between the themes.

#### *Access to green spaces in Kumasi*

Easy access to green spaces such as public parks is an important motivational factor that has been observed to encourage visitors to use such places in urban areas (Barbosa et al. 2007). In assessing the accessibility to green spaces in Kumasi, the per capita green space of the area was first calculated using WHO's minimum standard of 9 m<sup>2</sup> green space per city dweller as a benchmark (Kuchelmeister 1998, Sanesi and Chiarello 2006, Fuady and Darjosanjoto 2012). There was scant information about the quantity of green spaces in the study area so some deductions were made from the 2010 estimated total amount of open spaces in Kumasi which was of 2375.4 hectares (Ministry of Lands and Natural Resources 2010). This figure comprises many different spaces other than green spaces so further enquiry was undertaken to address the matter. A study by Tontoh (2011) and data from the Kumasi Metropolitan Assembly confirmed that green spaces occupy about 40 per cent of the total amount of open spaces in the area which is of 2375.4 hectares. Taking into account the latest population of

Kumasi of 2 035 064 inhabitants (Ghana Statistical Service 2012), an estimated 4.7 m<sup>2</sup> green space per city dweller was obtained. The above estimations showed that the per capita green space in Kumasi (4.7 m<sup>2</sup>) is far below the minimum green space standard recommended by WHO (9 m<sup>2</sup>) as illustrated in Fig. 3.

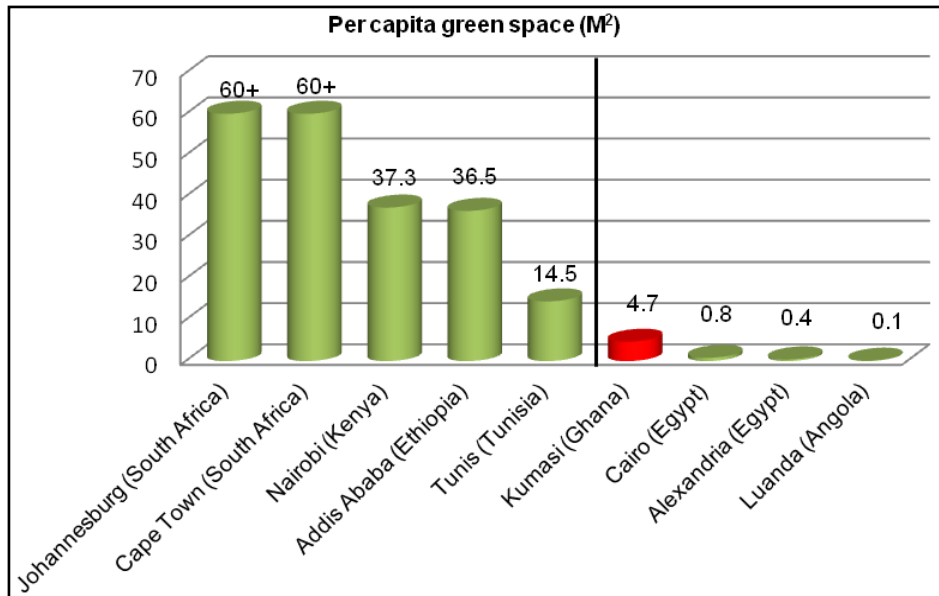


Fig. 3 – Green space per city dweller of Kumasi in the context of Africa  
Source: Economist Intelligence Unit (2011)

When compared to some cities in Africa, such as Johannesburg (South Africa), Nairobi (Kenya), and Addis Ababa (Ethiopia), the city's per capita green space lag behind greatly. Looking at these statistics, Kumasi needs more than 4 m<sup>2</sup> green spaces to augment its per capita green space capacity to meet the WHO's minimum standard and to have enough green spaces for its residents. This position of poor access to green spaces does not befits Kumasi given its track record of being a notable garden city in the past and its advantageous geographical location in Africa where there are favourable soil and vegetation conditions that support the green spaces (Geurts 2009, Quagraine 2011). Similar findings came out in a study by Nyantakyi-Frimpong et al. (2016) which found poor access to green spaces (such as urban farmlands) a problem in the Greater Accra Region of Ghana due to limited land made available for such spaces in urban areas.

Proximity to the green spaces especially public parks by way of walking distance was also assessed. Unlike other cities such as Sheffield, Madrid, Paris, Milan, Brussels and Glasgow where public green spaces such as parks and gardens have been found to be within 15 minutes walking distance (Stanners and Bourdeau 1995, Barbosa et al. 2007), in Kumasi it takes approximately 50 to 60 minutes for one to have access to a natural public park. This came up through the interactions with the residents of the selected neighbourhoods and the personal observations that were carried out. It was found out that most of the neighbourhoods in Kumasi do not have their own parks so they have to travel longer distances to use the ones in other neighbourhoods. The current level of accessibility was observed to discourage the residents from using many parks in Kumasi. This is in consonance with the findings of Abkar et

al. (2010) where poor access to green spaces was among the major obstacles that discouraged residents from using urban parks.

*Attractiveness and maintenance of green spaces*

The high level of attractiveness of green spaces such as parks and gardens is very important since it gives a good first impression to visitors and it encourages subsequent visits to the parks (van Herzele and Wiedemann 2003). Concerns on the attractiveness of green spaces featured prominently in the in-depth interviews and the focus group discussions. Issues of absence of signage, walkways and poor grown grasses on several parks and gardens in Kumasi strongly came up. Many of the parks were bare not having grasses on them. The untidy nature of many parks and its accompanying bad odour was another major issue. Specific parks and gardens such as Kumasi Children's Park, Adehyeman Gardens, Abbey's Park and Fante Newtown Park were found to have a filthy environment. The respondents (opinion leaders, city authorities and residents) expressed worries about the presence of many used polythene bags, solid waste and fouling of animals such as cattle, goats and sheep in the parks. Personal observations on some of the parks in Kumasi confirmed the seriousness of litters and the unpleasant odour (Fig. 4).



**Fig. 4 – The poor level of cleanliness on some parks in Kumasi**  
Source: Author's fieldwork (2013)

Portions of some parks were even turned into refuse dumps. This was influenced by poor provision of garbage bins in the parks and gardens (Table 2). One of such parks was the Kumasi Children's Park. The normal norm is that garbage bins have to be provided in the various parks and gardens, and to be frequently emptied to keep the sanitation condition of such places good but this arrangement was found not to be properly handled by the Department of Parks and Gardens due to financial constraints. This problem was exacerbated by the poor culture of waste disposal by the general public. It was found that the general public were of the view that keeping the green spaces clean and tidy is the sole responsibility of the city authorities and thus it indiscriminately litter these places. This observation supports the findings of Fuwape and Onyekwelu (2011) on some parks and gardens in African cities such as Ibadan, Lagos, Kano and Kaduna (Nigeria), Freetown (Sierra Leone) and Accra (Ghana) where

most of the parks were engulfed with much filth while some portions were even converted into refuse dumps.

This situation does not only substantially impinge detrimentally on the attractiveness of green spaces, but it has serious health implications for the visitors who use the parks for recreation. It makes such places common grounds for the contraction of diseases such as malaria and cholera which are associated with unhygienic environmental conditions. It also makes it difficult for common activities that often take place in parks such as sitting, lying and sleeping on grasses to be undertaken. Based on the indicators of the attractiveness theme, it can be said that the level of attractiveness of green spaces in Kumasi was poor (Table 2). It was the

*Table 2*

**Summary of the respondents overall views on the attractiveness of green spaces in Kumasi**

|                            | Indicator |             |             |             |             |             |
|----------------------------|-----------|-------------|-------------|-------------|-------------|-------------|
|                            | Signage   | Walkways    | FFL & AF*   | US**        | WGG***      | Dustbins    |
| Adehyeman Gardens good     | Poor      | Poor        | Poor        | Poor        | Poor        | Fairly      |
| Kumasi Children's Park     | Poor      | Poor        | Poor        | Poor        | Poor        | Poor        |
| Ridge Park                 | Poor      | Poor        | Poor        | Fairly good | Poor        | Poor        |
| Parks and Gardens (Patasi) | Good      | Good        | Fairly good | Good        | Good        | Fairly good |
| Fante Newtown Park         | Poor      | Poor        | Poor        | Poor        | Fairly good | Poor        |
| Kumasi Zoo                 | Good      | Good        | Fairly good | Poor        | Poor        | Good        |
| Abbey's Park               | Poor      | Poor        | Poor        | Poor        | Poor        | Poor        |
| KNUST Botanical Gardens    | Good      | Fairly good | Fairly good | Good        | Poor        | Good        |
| Lawns at the CBD           | Poor      | Fairly Good | Poor        | Poor        | Poor        | Poor        |

\*FFL & AF: Free from litter and animal fouling; \*\*US: Unpleasant smell; \*\*\*WGG: Well grown grasses

Source: Author's fieldwork (2013)

KNUST Botanical Gardens, Parks and Gardens at "Patasi" and to some extent the Kumasi Zoo that looked quite attractive. These places had signage, walkways, well grown grasses and some available garbage bins. However, on the remaining parks these facilities were missing. In Abbey's Park, Kumasi Children's Park, and Fante Newtown Park for instance, the situation was

worse as these places virtually have no facilities to make them attractive. The overall assessment of the attractiveness of green spaces in Kumasi is shown in Table 2.

Drawing on the findings of the attractiveness of green spaces, the study found a relationship to exist between this and the maintenance of green spaces in Kumasi. Poor maintenance was found as the root cause for the absence of several facilities on the green spaces to make them unattractive. Interviews with the Kumasi city authorities revealed the alienation or abandonment of some parks for several years without any form of maintenance work undertaken on them. The Kumasi Children's Park, Abbey's Park, and Fante Newtown Park were among the major parks that were found in such situation. An official of the Department of Parks and Gardens commented extensively on the broken down facilities in many parks, and the poorly maintained grasses, lawns, trees and shrubs in the CBD and along the principal streets of Kumasi. Fig. 5 provides photos showing the poor level of maintenance of some green spaces in Kumasi.



Abbey's Park

Fante Newtown Park

**Fig. 5 – The level of maintenance of green spaces in Kumasi**

Source: Author's fieldwork (2013)

Responses by selected opinion leaders provided much evidence on the widespread poor maintenance of green spaces in Kumasi. For example, one opinion leader remarked as follows:

*The Kumasi Children's Park is not functioning again as it has lost all its facilities due to lack of maintenance. Most of the facilities in Kumasi Zoo are very old and need to be replaced but nobody cares about it. In addition to this, the Ridge Park and the Fante Newtown Park are also losing their facilities due to poor maintenance (Key informant, Ahodwo Neighbourhood, IDI: 11/12/2012).*

This comment does not only paint a bad picture about how green spaces are suffering from poor maintenance but it also gives an idea about how such spaces are not recognized as important resources in Kumasi. The lack of financial commitments towards the maintenance of green spaces was the substantive factor found behind the poor maintenance. It came out that

the Kumasi city authorities do not have stable funds allocated for the maintenance of green spaces due to financial constraints. These revelations on poor maintenance from the study confirmed the findings of the 2012 Global Garden Report which pointed out poor maintenance as a devastating problem that is undermining the growth of green spaces in cities worldwide (Husqvarna Group 2012). Apart from financial hardships, the poor culture of maintenance was also found to hinder the maintenance of such spaces. In Kumasi and Ghana as a whole, it was observed that the frequent maintenance of facilities on public spaces is not a habit of the city authorities or other allied bodies. Even if the will is there, facilities on public spaces are often allowed to break down for a long period of time before actions are undertaken to remedy the situation. It has therefore become a practice of the city authorities of not regularly undertaking maintenance works on green space facilities. This habit does not only deny the green spaces of the needed maintenance works they require but it also make such places especially parks to lose their facilities that visitors can comfort themselves with, hence creating some link between the maintenance and the comfort themes.

*Comfort, safety and publicity of green spaces*

One of the fundamental goals of creating parks and other green spaces is to create spaces that people can rely on to enjoy and comfort themselves as indicated by Fredrick Law Olmsted who is often referred to as “the father of parks” (Shan 2009). However, for such comfort to be realized some facilities ought to be in place and maintained regularly. Critical among these facilities are seats, toilet facilities, and playing facilities (Dunnnett et al. 2002, Corner et al. 2006). Inadequate facilities in parks were a critical problem in Kumasi. The residents and opinion leaders said categorically that the lack of facilities such as seats, playing facilities and toilet facilities make them feel uncomfortable visiting many parks in Kumasi and hence deter them from using such places. They also added the noisy condition of some parks as another major issue that hinders their level of comfort on green spaces in the area. Table 3 provides an overview of the respondent’s assessment of the level of comfort in some parks and gardens in Kumasi.

|                            | Facilities |              |             |              |
|----------------------------|------------|--------------|-------------|--------------|
|                            | Seats      | Playing fac. | Toilet fac. | Serene envt. |
| Adehyeman Gardens          | Available  | Available    | Available   | Bad          |
| Kumasi Children’s Park     | Available  | Absent       | Absent      | Bad          |
| Ridge Park                 | Absent     | Available    | Absent      | Bad          |
| Parks and Gardens (Patasi) | Absent     | Absent       | Absent      | Bad          |
| Fante Newtown (Park)       | Absent     | Absent       | Absent      | Bad          |
| Kumasi Zoo                 | Available  | NA*          | Available   | Bad          |
| Abbey’s Park               | Absent     | Absent       | Absent      | Bad          |
| KNUST Botanical Gardens    | Available  | Absent       | Absent      | Good         |

\* NA: Not Applicable

Source: Author’s fieldwork (2013)

Personal observations affirmed the respondents' claims. Many of the green spaces lacked basic facilities such as seats and playing facilities. In some of the parks that had seats such as Kumasi Zoo and Kumasi Children's Park, the conditions of the seats were poor. The problem of noise in the parks was worrying as most of the parks were located in commercial areas and along busy roads. For example, the Adehyeman Gardens, Kumasi Zoo, Fante Newtown Park and Abbey's Park were all located at the heart of the CBD where noise from industries, vehicles and other commercial activities were very prevalent. Other parks such as Kumasi Children's Park, Ridge Park, and Parks and Gardens at Patasi Neighbourhood were also located along busy roads. The loud noises in the parks prevent visitors from having quiet time to reflect on their wellbeing and also reduce stress. Lack of seats in the parks was equally a big problem in Kumasi because seats are basic facilities that parks are expected to have. Studies in some African cities such as Nairobi (Makworo and Mireri 2011) and Kisumu (Rabare et al. 2009) produced similar results with lack of seats found as a common problem of many urban parks. This problem denies visitors the opportunity to sit and chat with friends or read materials which are among the common activities that take place in parks.

Related to the level of comfort on green spaces in Kumasi was the issue of safety or security that received attention in the study. Studies show that the level of safety influences visitors' decisions in choosing and using green spaces such as parks and gardens because many visitors want places that they will feel comfortable and safe from criminal activities (Ward et al. 2010). Cases of snatching of bags, mobile phones, undue attacks by criminals, and no lights on parks at night were the major misgivings that were highlighted in the focus group discussions. For example, one of the focus group participants said this:

*My friend's mobile phone and bag were snatched from her at Abbey's park some months ago when she was using the park as a walkway to her house. I have also been personally attacked by criminals at Fante Newtown Park before (Community member, Nhyiaso Neighbourhood, FGD: 12/02/2013)*

The theft and crime issues put fear in many of the park users especially those who use the parks as walkways at night. Worsening the security conditions of the parks was an isolated case of murder that was reported on one of the parks. One participant narrated:

*It is not advisable for anybody to use the Kumasi Children's Park at night because of poor security reasons and absence of light. The park is now a home for criminals and a lot of criminal activities take place there. Even about two weeks ago a student of Kumasi Polytechnic was killed in the park (Community member, Amakom, FGD: 13/01/2013)*

The above comments show how using some parks in Kumasi can be horrifying and insecure especially at night. This supports the assertion of Baycan-Levent et al. (2009) that green spaces can be a place for criminal activities especially at night and a home for the homeless. The finding also corroborates with studies in Bari (Italy), and Philadelphia (USA) where unsafe conditions of green spaces due to criminal activities emerged as a problem (Ho et al. 2005, Sanesi and Chiarello 2006). There was a lack of first aid and security guards on all the parks but they did not receive comments from the city authorities, opinion leaders and other allied bodies on green spaces. This might be due to the fact that such supplies are not considered as important resources that can help to enhance the safety of parks and gardens. The absence of light in the parks at night was found to limit the time visitors can spend in the parks and also motivate the criminal activities in the parks. At night, it creates a dark atmosphere for criminals to operate in the parks unnoticed. A similar finding came up in a study at Guangzhou (China) where darkness of parks was found to cause problems to park visitors (Jim and Chen 2006). The poor safety condition of the green spaces together with the unsatisfactory findings on the

comfort, attractiveness, maintenance and accessibility themes already discussed above had consequences on the publicity of green spaces in Kumasi. They made it difficult for much publicity to be giving to the green spaces because there are not enough good features to market the green spaces on.

The publicity of green spaces does not only enhance the number of visits to these places but it has been identified by Konijnendijk (2010) as a useful tool that helps to brand cities as green cities or garden cities. Such branding evokes positive acclamations for a city such as good and healthy living environment. In Kumasi, the Kumasi Metropolitan Assembly (KMA) is supposed to promote the green spaces through mediums such as websites, leaflets on parks and gardens, and the media especially through radio, television and newspapers because of their wider coverage and large followers. A representative from the KMA through in-depth interview said that none of the parks and gardens has a website or leaflet to provide information to the general public. He pointed out further that for quite a long time his outfit has not been able to promote any park or garden through media advertisements to make such places well-known due to paucity of resources, especially lack of funds.

It came out that Kumasi Zoo, Adehyeman Gardens and Kumasi Children's Park have lost the publicity they enjoyed in the past on radio due to poor condition of these places. Out of the numerous parks in Kumasi, Ridge Park was the only park that both the KMA and the officials from the media confirmed to have some publicity by the way of advertisements on the radio and this was due to some social events that are organised there. The low publicity of the green spaces makes the general public and visitors to have little information about the green spaces which negatively affect the visits to such places.

#### *Conservation and heritage, and community participation themes*

The conservation and heritage theme was one particular theme that had some positive responses from the respondents. These positive responses stemmed from green spaces in Kumasi helping to preserve monuments of great personalities of the Ashanti Kingdom to monuments bearing some cultural features of the "Ashantis" who are the indigenes of Kumasi (Fig. 6). For example, green spaces at some roundabouts such as "Suame" Roundabout and "Santasi" Roundabout had the monuments of Opoku Ware II and Osei Tutu I respectively. These were great kings of the Ashanti Kingdom. The "Gee" Roundabout, "Kejetia" Roundabout, Prisons Roundabout and some reserved lawns in the CBD also received much commendation from the study participants for having statues of key personalities and cultural symbols of the Ashanti Kingdom (example the Golden stool). The Kumasi Children's Park was also observed to contain the statue of the reigning queen mother of the Ashanti.

Although these monuments on roundabouts and lawns at the CBD in Kumasi help to preserve some cultural heritage, their focus was narrow and it was not exploited very much by visitors. They are concentrated on minor green spaces such as roundabouts and lawns, and centred greatly on statues. As a result of this they do not receive much patronage from visitors. This is contrary to the findings of the 2012 World Cities Culture Report where many urban green spaces such as parks across the world were found to receive many visitors due to a variety of cultural heritage these spaces preserve (BOP Consulting 2012). In terms of conservation of wildlife (plant and animal species), officials from the Wildlife Division, Environmental Protection Agency and the Forest Service Division in Kumasi rated the condition of green spaces in Kumasi as average. They cited Kumasi Zoo, Kumasi Children's Park and patches of forests at Nhyiaso, Danyame and Ridge neighbourhoods as some of the green spaces that harbour varieties of plant and animal species.



**Fig. 6 – Green spaces showing forms of cultural heritage at Kumasi**  
Source: Author's Fieldwork (2013)

*(a) A monument of Opoku Ware II at "Suame" Roundabout. (b) A monument of Okomfo Anokye at "Gee" Roundabout. (c) A monument of the Ashanti's golden stool at "Kejetia" Roundabout. (d) A man in a traditional cloth of the Ashanti's at Prison's Roundabout*

Closely associated with the conservation and heritage theme was the community participation in the management of green spaces in Kumasi. Studies show that community participation enhances conservation of green spaces and it also promotes community stewardship for green spaces (Enger 2005, CABE 2010). This theme looked at community participation from the viewpoint of direct involvement of neighbourhoods in the preservation of green spaces in their areas. The study neighbourhoods were not adequately consulted and informed on matters concerning green spaces by the city authorities. They were also not actively involved in the decision making process, and not empowered to self-facilitate initiatives to enhance green spaces because they were considered not to have the necessary expertise to undertake such tasks by the city authorities. One of the residents had this to say:

*I grew up in this neighbourhood and I have lived here all my life but I have never seen any group or residents of this neighbourhood been involved in green space preservation especially the Kumasi children's Park we have in this neighbourhood. The Kumasi Metropolitan Assembly does not regard us as important stakeholders, they do everything on their own and*

*neglect the participation of this neighbourhood* (Key informant, Amakom Neighbourhood, IDI: 14/03/2013).

The comment from this respondent show that the Kumasi city authorities tend to solely take initiatives and decisions on green spaces without the involvement of the local people who are also important stakeholders in the management of green spaces. This brings into play an element of autocratic governance practice adopted by the city authorities to manage green spaces. This became much clearer with the views of another respondent which is captured below.

*We, the community members, can help to preserve and maintain green spaces in this area. Instead of the city authorities to involve us in such activities they always sideline us and go on with their own initiatives on the green spaces* (Community member, Patasi Neighbourhood, FGD: 26/02/13).

The above comments show that the Kumasi city authorities value less the inputs and the benefits that the participation of the local people can bring to conserve the green spaces. The foregoing gives a clear picture of poor community participation in the management of green spaces in Kumasi. Similar findings came up in a study by Fuwape and Onyekwele (2011) which found poor community participation in green space management as a common problem in many West African cities. Conversely, in many European cities, especially cities in UK, residents and community groups are highly recognised by local city authorities and involved in the conservation of green spaces (CABE 2010).

### **Conclusions**

This paper has shown how the green spaces in Kumasi are in poor condition. Apart from the conservation and heritage theme, the performance of the green spaces on the other seven themes (attractiveness, comfort, safety, publicity, maintenance, community participation and accessibility) was poor. The paper concludes that multiplicity of themes or factors come together to enhance the state of green spaces, and that each of the themes needs attention due to some interdependencies that exist between them. For example, some relationships were observed to exist between maintenance and attractiveness themes, and comfort and safety themes. Conservation and heritage, and community participation themes also related very well. This suggests that keeping green spaces in good state demands broader attention as failure to do so may hinder the overall state of such spaces. Hence for cities to have good conditioned green spaces local city authorities must not be much selective in constraining their efforts to only one or two themes to the neglect of other themes since such decisions put the overall state of green spaces at risk. This extends the ideas expressed by Dunnet et al. (2002), Gobster and Westphal (2004), and other scholars who believe that the state of green spaces should not only be based on accessibility to such spaces but on an array of features that cover broader issues affecting the condition of green spaces in a given area.

It was revealed that the poor state of green space in Kumasi is primarily a result of underlying factors such as lack of priority to green spaces by the city authorities, poor culture of maintenance, uncooperative attitudes of the general public in conserving such spaces, lack of community participation and institutional inefficiencies. The general poor state of urban green spaces in Kumasi and its underlying factors therefore provide some lessons for other African cities where statistics show that green spaces are under severe threat. These lessons include prioritising green spaces in all development plans. The preparation of such development plans must take into account allocating specific areas for green spaces and such spaces protected against population growth and human activities. The poor maintenance culture should not be

encouraged. Agencies managing green spaces have to be well-resourced in terms of funds and equipment to perform regular maintenance works on green spaces. Specific budgetary allocations from the government can annually or quarterly be made available for such maintenance works. In addition to this, funds from the private sector and benevolent organisations can also be sought.

Another factor that requires much attention is the uncooperative attitude of the general public towards the management of green spaces. This can be addressed by local city authorities running educational programmes in a form of community seminars and workshops to educate the public on the importance of green spaces and the need to preserve such spaces. This sensitisation will make the public to appreciate green spaces and to refrain from activities that destroy these spaces. Lastly, a collaborative governance approach must be adopted to manage green spaces. The planning, implementation and management of green spaces should not only be engineered by city authorities but by wider stakeholder organisations including the private sector and especially the general public. This will make such organisations to feel part of the management process and therefore to actively participate in conserving green spaces.

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## RENTAL INCOME AND CAP RATES: A COMPARISON OF THE LISBON AND PORTO HOUSING MARKETS

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**Abstract:** The goal of this article is to analyse the relationship between rental income and capitalisation rates when real estate value is assessed in parishes of the Lisbon and Porto municipalities. Based on housing market values in euros per square metre during the 2006-2009 period, the income approach was used to compare the two main types of apartments (i.e. B2, or two-bedroom, and B1, or one-bedroom) in Lisbon and Porto. We used the capital asset pricing model to calculate the risk measure. The cluster analysis was used to group the Lisbon and Porto parishes according to their rental income and capitalisation rates. Regressions were used to model both geographical markets. Clear differences were found between Porto and Lisbon, the results being more robust for the Porto municipality in regard to B2 apartments. Moreover, rental income is inversely proportional to capitalisation rates for B1 apartments for Porto parishes, which means that there is an initial overinvestment.

**Key Words:** *real estate appraisal, income approach, cap rates, real estate investor, cluster analysis, Lisbon, Porto.*

### Introduction

The real estate market is of vital importance to market economies on both provisional rent and investment levels. For example, the housing market is one of the most important markets in the United States (Carrillo 2013). Real estate is the first source of bank loan guarantees and a lifelong family investment, thereby contributing to social wellbeing. Gat (1994) points out that the housing market has a unique characteristic in that the owner of the asset normally occupies the property and acts simultaneously as an investor and consumer of the real estate asset. In certain markets as in Hong Kong there are large proportions of owner investors as opposed to owner occupiers (Xiao et al. 2007, Wood and Ong 2013). However, in this article the housing market is going to be understood in a wider context and it is not going to be analysed in either owner occupier or owner investor perspective.

Various property evaluation methods are commonly used: the comparative method, which is the most frequently used (Rebelo 2002, Alcázar Molina 2003, Pagourtzi et al. 2003, Nebreda et al. 2006), the cost method (Barlowe 1986), and the income method (Alcázar Molina 2003, Trojanek 2010). In the real estate appraisal, the income method evaluates lease agreements (Alcázar Molina 2003) and it verifies the configuration of rents, vacancy rates and the lease duration (Deng et al. 2003). This method also considers the application of a corresponding capitalisation rate (cap rate)<sup>1)</sup> (Ghysels et al. 2007, Baum et al. 2011).

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1) The capitalisation rate represents the annual return on an investment before mortgage payments and income tax. To find the Cap Rate, it is possible to use the following formula:  $\text{Cap Rate} = (\text{Net Sales Value} / \text{Market Value}) \times 100$ . The Cap Rate in real estate is used as an income measure. The higher the Cap Rate the better the investment.

Using the income method in the real estate appraisal requires the knowledge of techniques to estimate future rent projections and to update these as needed. Appraisers must understand the quality and duration of contracts, the costs related to the property (i.e. pertinent physical, functional and technological downgrades) and, naturally, the discount rate (Kwong and Leung 2000, Shimizu and Nishimura 2007). These elements serve the purpose of determining the market value of the real estate property.

In the real estate market, the price formation process is subject to frequent non-rational behaviour (Scheinkman and Xiong 2003, Hong et al. 2006, Hayunga and Lung 2011). As a result, market prices often experience large short-term changes, although, in the long run, prices tend to fluctuate around properties' fundamental value, thus representing the prices that truly matter to investors (Gordon and Shapiro 1956, Fu and Ng 2001, Grimes and Aitken 2010). The classical finance theory asserts that the law of financial risk and return is universal, as assets are normally traded in frictionless markets in which the investor sentiment is set aside (Markowitz 1952, Gat 1994). In this approach, property is seen as a productive asset capable of generating rent at a particular level of revenue. This perspective is applicable to both real estate and stock markets. The market value based on actual income is interpreted as the maximum sum that a knowledgeable investor is willing to pay for the acquisition of an asset, particularly related to its present occupancy rate and rental income (Ruback 1995). However, as Clayton et al. (2009) posit, this present standard value model has been unable to explain crashes in real estate asset prices. This clearly indicates that real estate market investors live in, and take advantage of, information asymmetry. For example, Tavares et al. (2013) conclude that real estate market brokers tend to give potential buyers information on positive externalities and tend to hold information on less positive characteristics of the quality of the dwelling or potential negative externalities.

Therefore, clear differences exist between real estate and stock markets as investor sentiment is not set aside in the former (Gat 1994, Hayunga and Lung 2011). Moreover, owners in real estate markets are simultaneously investors and consumers of the asset (Gat 1994). The particularities of household finance are also important as household behaviour is difficult to measure as there are differences in the diversification of financing tools as well as in the mortgage refinancing tools among household investors (Campbell 2006). It is also important to refer that expected returns and expected return growth in rents behave differently among commercial real estate, industrial properties and apartments (Plazzi et al. 2010).

For example, in real estate appraisal, investors must know the average capitalisation rates (hereafter cap rates) of the different areas and/or market segments, as these are grouped by financial, economic, and geographic traits. Therefore, knowledge of cap rates is important, as it is verifying the possibility of geographical or financial arbitrage, naturally returning to fundamental risk and profitability considerations. Moreover, location plays a key role in property evaluation (Laakso 1992, Yiu and Tam 2004, Osland et al. 2007).

There are several studies analysing properties and real estate markets with some of them using cap rates (Das 2015, Peng 2016) and others (Van Ommeren and Koopman 2011, Stewart 2012) using rental income. However, both methods are seldom used simultaneously.

Based on the income approach and the aforementioned differences between real estate and stock markets, the main objective of the present study is to compare the relationship between cap rates and rental income in the two principal urban residential markets in Portugal – Porto and Lisbon. In terms of a recent historical and geographical perspective, the housing markets of Lisbon and Porto are relevant cases of study, either by the reconstruction of old buildings and their rehabilitation and reconversion, or by the construction of new houses, offices and commercial buildings.

These cities were selected because they are the two largest ones in Portugal and differences were expected not only between the two cities but also within them (Moreira et al. 2014). Moreover, there are studies characterizing those two markets, Lisbon being one of the most expensive cities in Europe (Lourenço and Rodrigues 2014, Moreira et al. 2014) while Porto lies in the Portuguese region with the lowest prices, despite being the nation's second largest city (Couto et al. 2006, Afonso and Melão 2007, Ferreira 2010, Moreira et al. 2014). As most of the studies of residential markets cover both houses and apartments, or real estate more generally, including residential and commercial properties, this article only analyses a specific segment of the housing market, namely apartments. It also assesses the relationship between cap rates and market value.

The paper is divided into six sections. After the introduction, section two surveys the relevant literature. The third section briefly describes the Portuguese housing market, while section four focuses on methodology and research data. Section five analyses Lisbon and Porto's housing market values based on rental income and cap rates for B1<sup>2)</sup> and B2 apartments from 2006 to 2009. The last section presents the main conclusions of the study.

### **Review of the literature**

The volatility and (in)efficiency of the real estate market compared with the financial market has been acknowledged in the literature for some time (Gat 1994, Fu and Ng 2001). This has led real estate researchers to seek to explain differences not only between the two markets but also within the real estate market.

After analysing the Hong Kong real estate market, Fu and Ng (2001) argue that real estate returns have an abnormally low coefficient of variation relative to other risky assets, which can be attributed to the appraisal smoothing problems due to the prolonged price adjustment to market news in real estate markets. Differences between the low and high-rent ends of residential market segments can be explained by the strong (low) rental pressure associated with low (high) quality, high (low) risk neighbourhoods demanding high (low) rates of return (Gat 1994). After examining the relationship between risk and return in residential spatial markets, Gat (1994) found that residential markets may not mimic financial markets in terms of risk and return due to two important variables: the location of residential assets and the quality of housing products.

As Gat (1994) claims, the nature of residential markets is influenced by the presence of owners who are simultaneously investors in, and consumers of, assets. According to the resale option and overconfidence theories (Scheinkman and Xiong 2003, Hong et al. 2006), current buyers of commercial property tend to take a short-term perspective and believe they can and/or will sell their property to a future purchaser who will pay a higher price. This, not unexpectedly, makes commercial property prices more volatile than residential property prices (Kwong and Leung 2000).

In related research, Grimes and Aitken (2010) studied the regional housing market of 73 regions in New Zealand. Their results demonstrate the importance of housing supply elasticity in sustaining the short-run price spikes and regional price dynamics. The dynamics of urban

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2) Data of the property analysed is based on the following description normally used in secondary market data available in Portugal: *B<sub>n</sub>* stands for an apartment with the number of bedrooms (*n*), plus a living/dining room and a separate kitchen. As such B1, B2, B3, B4 and B5 represent the number of bedrooms of the residential properties analysed (plus a living/dining room and a separate kitchen). It is important to refer that the B0 typology (known as studios or single dwellings) also exists in Portugal. In this typology the bedroom is not separated from the living/dining room. However, in the database analysed in this study, B0 apartments were included in the B1 category. As such they were analysed as one-bedroom apartments.

residential property prices were also examined by Wang (2004), who concluded that the lack of transaction information may not be the source of market efficiency.

When investors or households appraise how much to pay for residential property there is a large number of considerations: quality, size and amenity of accommodation; neighbourhood conditions – social, environmental, etc.; age of construction; design issues; relative location with respect to jobs, schools, shopping centres, cultural facilities; transport systems; interest rates and so on, that reflect end-user preferences (Shimizu and Nishimura 2007). These issues vary hugely between city suburbs. Moreover, real estate brokers possess information about the behaviour of market prices that are not available to potential buyers, which makes housing/real estate market data costly.

The income method identifies the market value of a real estate property by its capacity to produce rental income (Rebelo 2002, Alcázar Molina 2003, Baum et al. 2011). This value is given as the quotient of the net periodic income divided by its respective update rate. This method has the advantage of verifying the compatibility between market prices and property values (Hendershott 1998, Gallin 2006). This aspect offers benefits to financial entities, namely, those that manage real estate funds, in which rental income is a key component (Alcázar Molina 2003).

Alcázar Molina (2003) argues that the economic value of an asset is proportional to the economic income it generates so that this type of evaluation requires an analysis of lease contracts. The income method, thus, must verify the configuration of rents, vacancy rates and lease duration (Deng et al. 2003). Hendershott (1998) pioneered the estimation of risk premiums for the different classes of real estate property. In addition, this author's work explains the adjustments of long- and short-term housing prices. Black et al. (2006), in turn, state that the income method examines the relationship between fundamental values, market prices and speculative bubbles in the housing market.

The net present value model has been extensively used in real estate markets. For example, Campbell (1987) applied it while studying consumption and permanent income. Campbell and Schiller (1987) used a linear function to test and validate the current discounted values. Meese and Wallace (1993) also employed this approach when they examined the short- and long-term house prices in the residential market of northern California.

Jud and Winkler (1995) used a model based on real estate cap rates and concluded that capitalisation rates respond to changes in capital market spreads. Ghysels et al. (2007) found that the use of cap rates in the prediction of returns is economically significant. In addition, they estimate the market value of real estate property as the value of its current and future incomes. French (2004) also asserts that, for most common types of properties, their market value is based on their potential income as these are seen as an investment. In this context, Grenadier (2005) and Tabner (2007) state that the income method verifies the fundamental values and it compares them to market values.

Wang and Zhou (2000) demonstrated that developers supply more units than the housing market can absorb. Nevertheless, developers tend to avoid lowering prices or rental rates in order to eliminate vacancy rates, which impact cap rates. Other studies relate cap rates to rental income. Froland (1987), after analysing data from 1970 to 1986, concluded that a strong correlation exists between cap rates of property specific investments (residential, retail, office and industrial property) and the return from capital markets (property-specific mortgages and treasury bonds). Gallin (2006) relates housing prices to incomes, verifying that, when prices are high in comparison to the rental income, modifications occur in real incomes that are larger than normal, and vice-versa. Gallin (2006) concludes that the ratio of rental income to price is

an indicator of the potential valorisation of the real estate market. Hungria-Garcia et al. (2004) discuss various studies that applied cap rate models to diverse countries with the objective of obtaining a better model for determining properties' income that allows evaluations and analyses.

It is clear that is a huge debate regarding the importance of property investments as their rates/returns are subject to a large number of independent variables (positive/negative externalities, intrinsic characteristics of properties, shifts of domestic public policy, infrastructure investment, demographic trends, major economic shocks, among many others), with complex feedback loops, that make housing/real estate appraisal really complex. The length of anticipated investment, as well as risk/reward considerations, add to the complex of appraising property investments as political interference/decision-making may strongly influence cap rates/returns of property investment. Moreover, fiscal structures might also influence the type of investment, which is not the case in Portugal as capital gain taxes from property investment have the same fiscal treatment as capital gains from the stock market.

### **Aspects of the Portuguese real estate market**

Porto and Lisbon residential markets have been historically influenced by the public policy. They are the largest cities in Portugal. Lisbon and Porto have populations around 500 000 and 240 000 inhabitants, respectively. The greater Lisbon area hosts around 2 million inhabitants whereas the greater Porto area hosts 1.3 million inhabitants (INE 2015).

Geographically, both cities are nearly 300 km apart. Porto, being the capital of the northern part of the country, has an important historical heritage. Lisbon has also an historical heritage but it has been influenced by such important events as being declared the European Capital of Culture in 1994 and holding the 1998 Lisbon World Exposition. The latter led to several massive infrastructure investments such as the Vasco da Gama Bridge (then the largest in Europe), a new line for the Lisbon Metro, and a new central multi-modal terminal featuring trains, metro, buses and taxis. All these spurred real estate investments in the recent past. In 1996, UNESCO recognised the historic importance of Porto when its historic centre, with its exceptional cultural, patrimonial and land scape value, was added to its World Heritage List. Such events impacted the evolution of property markets in the 2000s differently in the two cities. Real estate investments in Lisbon expanded rapidly, whereas Porto's real estate market was conditioned by the urban rehabilitation policies.

Urban rehabilitation in Portugal started, more generally, in the late 1960s as it was a latecomer to the industrial revolution and it did not suffer the devastating consequences of the Second World War (Pinho 2009). However, the priority of the Portuguese government at that time was to supply social housing as there were strong migratory currents to Porto and Lisbon (Madeira 2009), including the plan to improve the situation in Porto and to construct new houses in Lisbon (Silva 2012).

The 1970s saw new programs launched for the recovery of degraded urban areas (PRAUD) that targeted illegal neighbourhoods and run-down industrial areas (Madeira 2009). In the 1990s, new programs were launched to address the rehabilitation of Lisbon and Porto historical centres – RCRIA, REHABITA, RECRIPH, SOLARH – in which the State supported (a) conservation projects for certain important buildings while (b) municipal authorities financed the reconstruction of old urban buildings (Silva 2012). In 2004, urban rehabilitation societies were legally created (Law 104/2004) and given the power to acquire and rehabilitate property and redefine their uses. These societies normally worked closely with municipal authorities and strongly influenced local housing policies.

Lisbon's population and territory have been growing faster than those of Porto, aided by being

the nation's capital and by the Portugal's highly centralised territorial, industrial and political strategies, giving it stronger institutional weight. In contrast, Porto's population has tended to stabilise or even to register a slight decline. However, both Lisbon and Porto have continued their territorial expansion by absorbing fringe settlements, although Lisbon's metropolitan area is better consolidated than the one of Porto's (Gato 2013).

The evolution of the Portuguese residential real estate market has been studied by Tavares et al. (2014), who claim that, after a boom period commencing in the early 1990s, Portugal went from a situation of housing shortage to a housing surplus in the 2000s. According to Tavares et al. (2014), one of the reasons for the large increase in the housing stock, especially from 1997 onwards, was that Portugal became a member of the European Union, which led to lower domestic interest rates. Eurozone membership then saw a large increase of the housing loans compared to other private loans and, simultaneously, a substantial rise of private indebtedness. Given the high levels of both private and public debt, the global financial crisis commencing in 2007 savagely impacted the Portuguese economy and especially the housing investments.

The analysis of the housing market prices reveals that, between 2003 and 2009, Algarve was the region of Portugal with the highest prices, followed by the Lisbon region. The northern region, where Porto is located, had the lowest prices overall.

The annual growth rate of housing loans in Portugal has been steadily decreasing since 2001, while in Spain this decrease was noticeable from 2008 onwards as a consequence of the subprime crisis. However, the price of dwellings per square metre is larger in Portugal (and Lisbon) than in Spain (and Madrid), which makes Lisbon one of the most expensive capitals of Europe. Moreover, Portugal has a price-to-income ratio<sup>3)</sup> of 105, only behind Germany in the European Union (Lourenço and Rodrigues 2014). The worrying construction confidence index was similar to the consumer confidence index even before the global financial crisis. Both indices have recorded substantially lower values since 2002, and they represent one of the reasons for the rate fall of new home construction. Tavares et al. (2014) refer that the doubtful loans to construction companies have quintupled in the previous six years. Another interconnected negative impact of the global financial crisis is the rise in the youth unemployment rate, which reduces the potential demand for new homes and, in turn, raises job losses.

Before the early 2000s, Portugal's housing market had met rising demand and shortages through mass construction, but supply proved excessive and resulted in a saturated market while real estate construction subsequently decreased. The Portuguese residential market has been characterized by the purchase of a home, where the owner investor plays a fundamental role, but this market has been extremely influenced in recent years by the nation's unfavourable economic performance. Finance for house purchase became expensive and less accessible to the majority of the Portuguese, leading to a significant reduction in the activity of this market (Tavares et al. 2014). However, from the end of 2013, a recovery of this sector began to be visible, particularly in the cities of Lisbon and Porto. Foreign investment, which was traditionally directed to Algarve because of its tourism attractiveness, kicked off this new momentum in the market, and to this end, programs to stimulate foreign investment, such as the 'Golden Visa' and the 'Tax Regime of the Resident Status', were created to allow foreign investment in real estate and to permit residence in Portugal to foreign citizens (Mesquita 2014).

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3) The price-to-income ratio looks at the total cost/price of a home/property relative to median annual incomes. The higher the price-to-income ratio, the costlier the property is to acquire. At its most basic level, the price-to-income ratio is a benchmark for understanding how expensive houses/properties are.

The Portuguese housing market is characterised, as many markets are, by an insufficient transparency that results from, on the one hand, the asymmetrically distributed information and, on the other hand, the agents' inability to exploit this information properly. Moreover, differences exist across geographic markets that need to be understood. For example, the lack of a long-term housing policy and prolonged rent-controlled leases imposed by the state have led to (Vilaça and Guerra 1994):

- (1) The decapitalisation of proprietors,
- (2) Lack of investment in new housing and maintenance,
- (3) Speculation regarding new leases.

Despite these negative trends, Ferreira (2010) describes how public housing strategies helped the Lisbon metropolitan area to build regional, social and economic interconnectedness. Pereira's (2013) case study further refers to how urban housing plans supported the transformation of industrialised, low socioeconomic metropolitan areas into high-end, elite metropolitan areas. Finally, Afonso and Melão (2007) analysed the Porto municipality from a socioeconomic point of view, including this city's central core and interrelatedness with nearby cities.

Since the beginning of the 2000s, researchers have observed that the economic cycles of the United States, Europe and Japan are coinciding and that they are at their lowest levels. More specifically, Portugal's economic growth rates have been below the European Union average (Aubyn 2007). After the global financial crisis, the Portuguese economy went through extremely difficult times, requiring tough budgetary management to constrain public debt and the exercise of credit constraint, thereby lowering investment, with pervasive negative consequences for the real estate market, in which the average house prices, in terms of €/m<sup>2</sup>, follow a downward trend by both region and dwelling type (Tavares et al. 2014). Although Europe and Japan were still struggling, the US GDP, in contrast, rebounded quite strongly. Indeed, Portugal's annual GDP growth rate turned strongly negative for much of 2012. Despite this, the Portuguese housing market has behaved differently to Spain's, although there are several similarities between the two countries' business cycles. During the last three decades, Portugal's residential market experienced a lower volatility compared with Spain's and none of the speculative bubbles (Lourenço and Rodrigues 2014).

At the end of the 20th century, most residential property transactions in Lisbon and Porto shifted geographically to the suburbs and especially to the urban fringe, where housing prices were cheaper while there was good transport accessibility (Fonseca et al. 2002, Meijers et al. 2012). According to Fonseca et al. (2002: 16): "*The decrease in the number of inhabitants of the city, which has mostly been due to the active young people moving to the suburbs, has been reinforced by the tertiarization of the central areas and by the exponential increase in the prices of land in the more central and 'noble'/high social status' areas*". Only in 2014, a recovery in demand for inner city residential accommodation in Lisbon and Porto became visible, partly driven by a slump in the fringe new home construction as a result of the global financial crisis. But other factors were equally, if not more, important, including the successful programs to encourage foreign investment, new economic and fiscal policies, legislation to promote urban rehabilitation, city planning strategies, and increased in-bound tourism. Collectively, these processes triggered large investments residential accommodation and a near total renewal of those cities' urban centers.

Using the income approach, Couto et al. (2006) found that the parishes in the historical centres of Porto and Lisbon generated very low market coefficients as defined by the average transaction value of each parish compared to a reference value for each Porto or Lisbon district. They claim that the main reason behind the low market coefficients is that they reflect long-held residential markets with a low turnover of properties, normally dominated by commercial uses, and with low demand from those searching for apartments. This study also

found that proximity to highways is very important in increasing the demand for residential property, and therefore its price, as such infrastructure enables good access to work, shopping, recreation, and education. Finally, Lisbon, Porto and Coimbra, with overall coefficients between 0.95 and 1.15, were found to be the main sought-after regional markets since they are the country's main industrial development poles. Moreover, they include the important historical centres that led to the development of new industrial and residential areas.

Tavares et al. (2014) also analysed the Portuguese housing market over time. They concluded that differences in unit house prices (in Euros per square metre) exist not only among several regions, and especially between the metropolitan areas of Lisbon and Porto, but also among the different types of housing, in which B1 houses were the most expensive ones, followed by the B5, B4, B2 and, finally, B3 houses. Moreover, these differences remained stable over time. Finally, Moreira et al. (2014), using the income approach when analysing Portuguese municipalities, found that Lisbon, Cascais, Oeiras, Loures, Amadora, Almada and Porto were the municipalities recording the highest housing market rental incomes, for both B1 and B2, in terms of Euros per square metre.

As seen before, the real estate market is highly complex and potentially unstable, both in terms of processes and actors as there are: (1) a considerable variability in the operation of housing markets over time, influenced by the macro-economic conditions and domestic public policy responses; (2) important factors such as (un)employment, job security, demographic changes, land-use planning, infrastructure supply investment, among others, that influence the domestic housing market conditions; (3) quality governance issues that may influence Portugal's attractiveness in front of other EU countries in relation to real estate investments; (4) changing responses of the construction companies / property developers to items 1-3 referred above; (5) changing preferences in residential accommodation over time; (6) potential differences in the way all these issues play out in different geographical / industrial environments.

### Methodology

The present empirical study used the real estate *Confidencial Imobiliário's* database of statistical series for 2006, 2007, 2008 and 2009, which are the only years currently available. Time series data regarding the market value, in € per square meter (€/m<sup>2</sup>), of the residential markets of the Lisbon and Porto metropolitan areas were used. The sample of apartments used in this study was restricted to the B1 and B2 categories because of the limited data on B3 and B4 apartments. Thus, two quarterly data series were constructed: one for B1 apartments and another for B2 apartments. In addition, the net present value of the properties in €/m<sup>2</sup> was calculated for both categories.

Based on the analysis of the database and to eliminate severe outliers, the properties with the following characteristics were removed: monthly income greater than €25 000 and lower than €50; and areas greater than 500 m<sup>2</sup> and smaller than 10 m<sup>2</sup>. Moreover, in order to smooth the information, properties with the following characteristics were removed: monthly income greater than €50/m<sup>2</sup> and lower than €2/m<sup>2</sup>. In this way, a group of series were obtained for 10 parishes in the municipality of Porto and 37 parishes in the municipality of Lisbon. In order to evaluate the evidence of the income model to the reality of the Portuguese housing market, the perpetuity model referred to by Brown and Cliff (2005), Geltner et al. (2007) and Clayton et al. (2009) was used.

For Clayton et al. (2009), the equilibrium price of the property in period  $t$ ,  $P_t^e$ , should be equal to the current value of discounted Net Operating Income (NOI), assuming an adjusted, constant

and unleveraged risk rate  $r_t$ . That is,

$$P_t^e = \frac{NOI_1}{(1+r_t)} + \frac{NOI_2(1+g_2)}{(1+r_t)^2} + \frac{NOI_3(1+g_3)}{(1+r_t)^3} + \dots + \frac{NOI_T(1+g_T) + NSP_T}{(1+r_t)^T}$$

where:

- $T$  is the expected period of exploitation in years;
- $NSP_T$  is the expected liquid sale of the product in year  $T$ ;
- $NOI$  represents the group of expected liquid revenue.

According to Geltner et al. (2007), it is possible to simplify the above formula at the moment  $t$ ,

given that the NOI foresees a constant growth rate  $g_t$ , making  $P_t^e$  a function of the expected growth of NOI and of the specific discount rate of property of the adjusted risk rate. That is:

$$P_t^e = \frac{NOI_1}{(r_t - g_t)} = \frac{NOI_1}{R_t^e} \text{ or } \frac{P_t^e}{NOI_1} = \frac{1}{(r_t - g_t)}$$

where:

$R_t^e$  is the *cap rate* of equilibrium at  $t$ ;

$g_t$  is the growth rate of NOI at moment  $t$ , and it is expected to be constant. Normally, the growth rate corresponds to the valorisation of the property.

$$R_t^e = (r_t - g_t) \quad (3)$$

In this study, the evaluation carried out through the income method was obtained through the discount rate calculated through the *Capital Asset Pricing Model* (CAPM). This model was developed by Sharpe (1964) and Mossin (1966) and based on the equation (4):

$$E(R_i) = R_f + B_i(E(R_m) - R_f) \quad (4)$$

where:

- $E(R_i)$  is the expected rate of return;
- $R_f$  is the free risk interest rate;
- $E(R_m)$  is the expected market return;

$\beta_i$  is the beta for B1 and B2 types.

Beta was calculated by the equation:

$$\beta_i = \frac{Cov(R_i, R_m)}{Var(R_m)} \quad (5)$$

where:

$Cov(R_i, R_m)$  represents the covariance between profitability of the analysed categories (B1 and

B2) and the market return profitability;  
 $\text{Var}(R_m)$  represents the variance of the market profitability return.

The interest rate series of treasury bonds at a fixed rate, with a two-year period, was used as a proxy of  $R_f$ . The market profitability values were calculated by taking into account the average cap rate values for the corresponding quarter. These were calculated separately for B1 and B2 apartments.

Beta was calculated by the formula (5) for B1 and B2 apartments. The beta value for B1 housing is 1.055 and for B2, 1.036. As beta is a risk measure, it can be concluded that the risk of B1 apartments is higher than that of B2.

The cap rates for all parishes were also calculated for the values presented in the sample. Cap rate values are calculated by dividing the profitability value by the value of the supply price (Ling and Archer 2006). According to Laia (2007), the formula for the cap rate can be written in the following manner:

$$V_0 = \frac{R_1}{y_1} \quad (6)$$

where:

- $V_0$  is the value of the real estate property;
- $R_1$  is the foreseen return for the first year of exploitation;
- $y_1$  is the initial cap rate.

By knowing a certain property and the market cap rate for similar properties, this formula can be used to calculate the property's value. This is the formula for perpetuity without growth, which implies that the property's profitability will remain constant in the future.

In the present study, the cluster analysis was used to aggregate the values of rental income and cap rates for the data series of Lisbon and Porto municipalities. Various hierarchical aggregation criteria were used to demonstrate that the differences between clusters are statistically significant (Marôco 2007). The cluster analysis is a multivariate technique that has a primary purpose grouping objects (parishes) based on characteristics (cap rates and rental income), such that the cluster exhibits high within-cluster homogeneity and high between-cluster heterogeneity. We used the single linkage clustering method for generating income rents for B1 and B2 apartments in Lisbon and Porto parishes. As we reached three clusters for the income rents, for both cities, we decided to use the number of generated clusters (three) for clustering the cap rate. The centroid linkage criterion was applied for clustering cap rates for B1 and B2 apartments both in Lisbon and Porto.

To facilitate the visual representation of the clusters, we represented them into figures – not to scale – for both Lisbon and Porto. The clusters in both cities are represented in different colours. There are certain parishes that are not included in the analysis as the data did not cover the threshold value of 30 transactions per parish per year to be included in the analysis. In those cases, the parishes were left in white (without colour). The total number of analysed properties are shown in Table 1.

To analyse the differences between the two selected markets, we decided to use the Pearson correlation – between values of rental income and the cap rates for each parish – for Porto and Lisbon parishes, for both B1 and B2 apartments.

Table 1

**Total number of analysed properties**

| City   | Typology | 2006 | 2007 | 2008 | 2009 |
|--------|----------|------|------|------|------|
| Porto  | B1       | 800  | 754  | 762  | 784  |
|        | B2       | 687  | 653  | 677  | 680  |
| Lisbon | B1       | 1165 | 1166 | 1154 | 1205 |
|        | B2       | 1120 | 1055 | 1085 | 1104 |

Multiple linear regression analysis was used to model the functional relationship between several independent variables and the dependent variable. The average market value is the dependent variable. Initially, the model included the following variables: discount rate, gross national product (GDP), growth rate, cap rate clusters, population density and the evaluation of housing values (net present value). This composition was based on the model developed by Clayton et al. (2009). However, as the discount rate and the GDP growth rate were not statistically significant, they were removed from the model. The used discount rate is the one calculated through the capital asset pricing model (CAPM). Durbin-Watson and F statistics were used to guarantee that the data evaluated in the regressions did not present collinearity.

**Results and Discussion**

*Analysis of the parishes of Lisbon.* Table 2 presents the average rental income in €/m<sup>2</sup> of Lisbon parishes for the three clusters found for B1 and B2 apartments, for the 2006-2009 period. It should be noted that, except for the parishes of Santa Isabel and S. Maria de Belém,

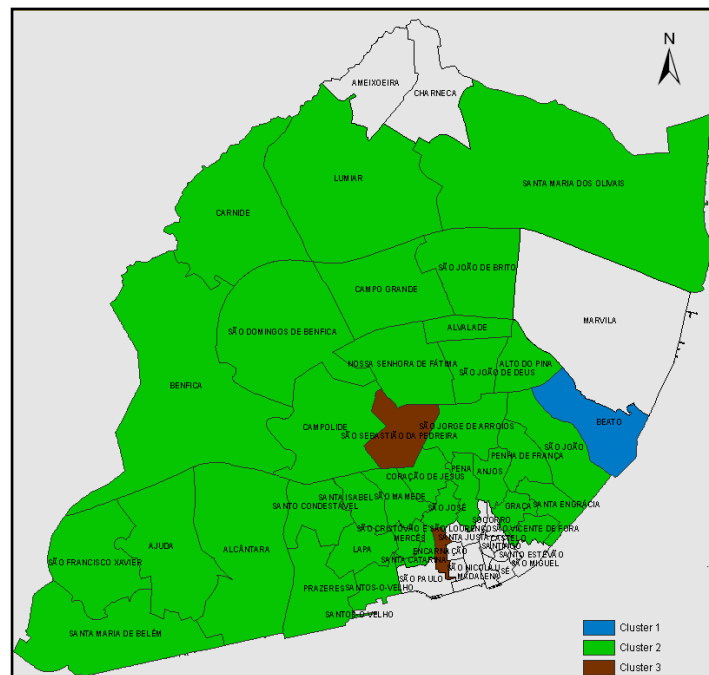


Fig. 1 – Representation of rental income clusters for B1 properties for the parishes of Lisbon

Table 2

**Average (€/m<sup>2</sup>) and standard deviation of rental income for the parishes of Lisbon**

| B1                    |              |                  |                 |                 | B2                    |              |                  |         |                 |
|-----------------------|--------------|------------------|-----------------|-----------------|-----------------------|--------------|------------------|---------|-----------------|
| Parishes              | Average      | Stand. Deviation | Cluster         | Cluster Average | Parishes              | Average      | Stand. Deviation | Cluster | Cluster Average |
| S. Sebastião Pedreira | 14.15        | 1.59             | 3               | 14.06           | S. Sebastião Pedreira | 12.74        | 1.17             | 3       | 12.08           |
| Encarnação            | 13.97        | 2.51             |                 |                 | Encarnação            | 12.59        | 1.89             |         |                 |
| Coração de Jesus      | 13.47        | 1.65             |                 |                 | Santa Isabel          | 12.38        | 2.03             |         |                 |
| São João de Deus      | 13.40        | 1.25             | 2               | 11.85           | S. Maria de Belém     | 11.91        | 0.73             | 2       | 10.73           |
| São Mamede            | 13.18        | 1.89             |                 |                 | S. Maria Olivais      | 11.82        | 0.84             |         |                 |
| Mercês                | 13.07        | 1.40             |                 |                 | Coração de Jesus      | 11.63        | 1.30             |         |                 |
| Santa Maria Olivais   | 13.05        | 0.91             |                 |                 | São José              | 11.52        | 1.90             |         |                 |
| São José              | 12.94        | 2.22             |                 |                 | Pena                  | 11.27        | 0.69             |         |                 |
| Santa Catarina        | 12.74        | 1.61             |                 |                 | São Mamede            | 11.22        | 0.55             |         |                 |
| Campolide             | 12.65        | 0.93             |                 |                 | Campolide             | 11.16        | 1.38             |         |                 |
| N. Senhora Fátima     | 12.33        | 1.00             |                 |                 | Mercês                | 11.02        | 1.46             |         |                 |
| Campo Grande          | 12.31        | 1.07             |                 |                 | Lapa                  | 10.74        | 0.80             |         |                 |
| Santa Isabel          | 12.05        | 1.22             |                 |                 | Campo Grande          | 10.50        | 0.99             |         |                 |
| São Jorge Arroios     | 12.04        | 1.18             |                 |                 | N. Senhora Fátima     | 10.47        | 0.81             |         |                 |
| Lapa                  | 12.00        | 0.88             |                 |                 | S. João de Deus       | 10.33        | 1.83             |         |                 |
| S. João de Brito      | 11.92        | 0.68             |                 |                 | São Jorge de Arroios  | 10.29        | 1.20             |         |                 |
| Prazeres              | 11.88        | 1.00             |                 |                 | Santos-o-Velho        | 10.29        | 1.10             |         |                 |
| S. Domingos Benfica   | 11.84        | 0.65             |                 |                 | Alvalade              | 10.19        | 1.11             |         |                 |
| Pena                  | 11.77        | 2.35             | 1               | 9.43            | Prazeres              | 10.12        | 1.20             | 1       | 9.43            |
| S. Francisco Xavier   | 11.76        | 1.05             |                 |                 | S. Francisco Xavier   | 10.03        | 0.85             |         |                 |
| Santo Condestável     | 11.66        | 0.83             |                 |                 | Santo Condestável     | 10.00        | 0.74             |         |                 |
| Alcântara             | 11.65        | 1.09             |                 |                 | S. João de Brito      | 9.95         | 0.77             |         |                 |
| Carnide               | 11.59        | 0.86             |                 |                 | Santa Catarina        | 9.91         | 1.42             |         |                 |
| São João              | 11.44        | 1.84             |                 |                 | Graça                 | 9.86         | 1.62             |         |                 |
| Graça                 | 11.35        | 1.21             |                 |                 | Alto do Pina          | 9.75         | 1.44             |         |                 |
| Alto do Pina          | 11.29        | 0.78             |                 |                 | Carnide               | 9.53         | 0.80             |         |                 |
| S. Maria Belém        | 11.25        | 1.42             |                 |                 | S. Domingos Benfica   | 9.44         | 0.48             |         |                 |
| Alvalade              | 11.24        | 1.11             |                 |                 | Benfica               | 9.39         | 0.62             |         |                 |
| Lumiar                | 11.24        | 0.89             |                 |                 | Lumiar                | 9.32         | 0.59             |         |                 |
| Penha de França       | 11.16        | 0.64             |                 |                 | Santa Engrácia        | 9.22         | 0.80             |         |                 |
| Ajuda                 | 11.14        | 1.73             |                 |                 | Alcântara             | 9.20         | 0.71             |         |                 |
| Santos-o-Velho        | 10.95        | 1.31             |                 |                 | S. Vicente de Fora    | 8.95         | 0.91             |         |                 |
| Anjos                 | 10.90        | 1.40             |                 |                 | Ajuda                 | 8.91         | 0.75             |         |                 |
| Benfica               | 10.63        | 0.82             | Beato           | 8.77            | 0.73                  |              |                  |         |                 |
| Santa Engrácia        | 10.56        | 1.29             | Anjos           | 8.69            | 1.21                  |              |                  |         |                 |
| S. Vicente de Fora    | 10.54        | 2.34             | Penha de França | 8.67            | 1.19                  |              |                  |         |                 |
| Beato                 | 9.43         | 1.24             | S. João         | 8.67            | 0.64                  |              |                  |         |                 |
| <b>Average</b>        | <b>11.91</b> | <b>1.29</b>      |                 |                 | <b>Average</b>        | <b>10.28</b> | <b>1.06</b>      |         |                 |

the B1 category has superior rental income than B2 apartments have. Moreover, the average rental income of B1 housing is 15% larger than the rental income of the B2 category.

The cluster analysis of Lisbon parishes (Fig. 1, Fig. 2) resulted in a group of three clusters. The differences between Clusters 1, 2 and 3 are statistically significant with a confidence level of

95% for B1 apartments and of 99% for B2 apartments. As shown in Table 2, the rental income clusters for B2 housing are more homogenous than are those of B1.

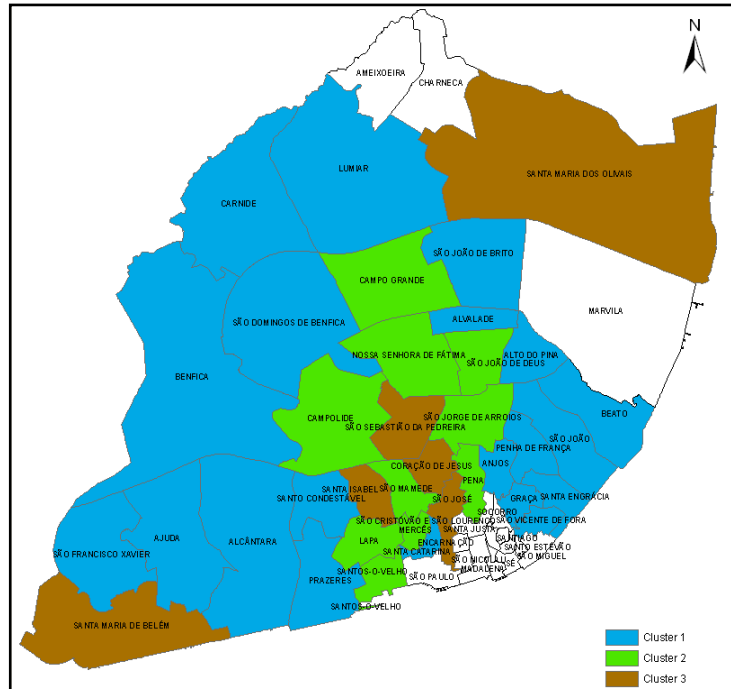


Fig. 2 – Representation of rental income clusters for B2 properties for the parishes of Lisbon

Table 3 presents the average cap rates for Lisbon parishes, as well as for the three clusters encountered for both B1 and B2 apartments (Fig. 3, Fig. 4). Because this cluster analysis served as a basis for the construction of the regression models, the Lisbon parishes that presented standard deviations of the rental income larger than 1.5 were removed as the variability found amongst the standard deviations were abnormally large when compared with the average found. These parishes exerted an impact on the regression residuals that did not permit the presentation of well-adjusted models.

In Lisbon parishes, the average cap rates for B1 apartments (5.38%) are greater than the average cap rates for B2 housing (5.12%), as shown in Table 3. Notably, this difference in averages is reflected in the fact that 15 parishes have an average cap rate of B1 apartments greater than that of B2 housing. The parish of São Francisco Xavier is the only one that presents similar average cap rates for B1 and B2 apartments. In turn, only eight Lisbon parishes present greater average cap rates for B2 housing in comparison with B1 apartments.

In regard to the standard deviation of cap rates for Lisbon parishes, the results verify that both B1 and B2 apartments present similar values of 0.49. Heterogeneity is high, given that 11 parishes have a standard deviation of the B1 cap rate larger than the standard deviation of the B2 cap rate, while 11 parishes have a standard deviation for the B2 cap rate greater than the B1 cap rate. Only two parishes, Santos-o-Velho and Carnide, present similar standard

deviation values for B1 and B2 housing.

The agglomeration of average cap rates (Table 3) is more homogenous for B2 apartments than for B1 housing in the three clusters encountered. The differences between Clusters 1, 2 and 3 – for both B1 and B2 apartments – are statistically significant at a significance level of 1%.

The Pearson correlation between the average values of the rental income and cap rates for Lisbon parishes for B1 housing is 0.288 and for the B2 category, 0.385. Table 4 presents the regressions for B1 and B2 apartments for Lisbon parishes. The regression models were studied for the values of €/m<sup>2</sup> for B1 and B2 apartments.

Models for B1 and B2 are robust. For B1 apartments, it is possible to conclude that market values for clusters 2 and cluster 3 have a devaluation of €291.101 and €350.173 per m<sup>2</sup>, respectively, in relation to cluster 1, based on the different cap rates for those clusters. The Lisbon market behaves similarly for B2 apartments, although it is possible to conclude that the devaluation is lower for cluster 2 than for cluster 3, respectively of €155.632 and €357.468 per square metre.

Table 3

**Average (%) and standard deviation of cap rates from the parishes of Lisbon**

| B1                   |             |                  |              |                 | B2                |             |                  |         |                 |
|----------------------|-------------|------------------|--------------|-----------------|-------------------|-------------|------------------|---------|-----------------|
| Parishes             | Average     | Stand. Deviation | Cluster      | Cluster Average | Parishes          | Average     | Stand. Deviation | Cluster | Cluster Average |
| S. Maria dos Olivais | 6.01        | 0.47             | 3            | 5.86            | S. M. Olivais     | 6.04        | 0.53             | 3       | 5.67            |
| Mercês               | 5.85        | 0.71             |              |                 | S. M. Belém       | 5.73        | 0.37             |         |                 |
| Penha de França      | 5.81        | 0.33             |              |                 | Campolide         | 5.69        | 0.74             |         |                 |
| Prazeres             | 5.75        | 0.54             |              |                 | Beato             | 5.59        | 0.48             |         |                 |
| Campolide            | 5.66        | 0.52             |              |                 | Benfica           | 5.54        | 0.36             |         |                 |
| Benfica              | 5.60        | 0.44             | 2            | 5.44            | Santa Engrácia    | 5.46        | 0.56             | 2       | 5.11            |
| Lumiar               | 5.58        | 0.38             |              |                 | Mercês            | 5.34        | 0.74             |         |                 |
| Alcântara            | 5.56        | 0.57             |              |                 | Alto do Pina      | 5.25        | 0.73             |         |                 |
| Santo Condestável    | 5.48        | 0.43             |              |                 | S. J. Arroios     | 5.25        | 0.61             |         |                 |
| S. D. de Benfica     | 5.47        | 0.31             |              |                 | Lumiar            | 5.18        | 0.36             |         |                 |
| Alto do Pina         | 5.44        | 0.38             |              |                 | Santos-o-Velho    | 4.98        | 0.52             |         |                 |
| S. Jorge de Arroios  | 5.44        | 0.56             |              |                 | S. D. Benfica     | 4.98        | 0.25             |         |                 |
| Santa Engrácia       | 5.40        | 0.64             |              |                 | Anjos             | 4.96        | 0.67             |         |                 |
| Beato                | 5.34        | 0.73             |              |                 | S. J. Brito       | 4.90        | 0.35             |         |                 |
| Campo Grande         | 5.34        | 0.45             |              |                 | Carnide           | 4.89        | 0.39             |         |                 |
| Carnide              | 5.32        | 0.39             |              |                 | Prazeres          | 4.88        | 0.60             |         |                 |
| N. S. de Fátima      | 5.26        | 0.44             |              |                 | Santo Condestável | 4.88        | 0.49             |         |                 |
| S. Maria de Belém    | 5.26        | 0.68             |              |                 | N. S. Fátima      | 4.88        | 0.39             |         |                 |
| Anjos                | 5.23        | 0.64             |              |                 | Penha de França   | 4.87        | 0.69             |         |                 |
| Lapa                 | 5.07        | 0.39             |              |                 | Lapa              | 4.79        | 0.35             |         |                 |
| Santos-o-Velho       | 4.87        | 0.52             | S. F. Xavier | 4.77            | 0.41              |             |                  |         |                 |
| S. João de Brito     | 4.85        | 0.29             | Alvalade     | 4.74            | 0.49              |             |                  |         |                 |
| S. Francisco Xavier  | 4.77        | 0.47             | Campo Grande | 4.71            | 0.44              |             |                  |         |                 |
| Alvalade             | 4.63        | 0.46             | Alcântara    | 4.64            | 0.32              |             |                  |         |                 |
| <b>Average</b>       | <b>5.38</b> | <b>0.49</b>      |              |                 | <b>Average</b>    | <b>5.12</b> | <b>0.49</b>      |         |                 |



Table 4

**Regression models for B1 and B2 apartments for Lisbon parishes**

|                   | <b>Model1<br/>(B1)</b> | <b>sig</b> |                   | <b>Model2<br/>(B2)</b> | <b>sig</b> |
|-------------------|------------------------|------------|-------------------|------------------------|------------|
| Constant          | 2004.577               | 0.000      | Constant          | 1715.144               | 0.000      |
| EvaluB1           | 0.349                  | 0.000      | EvaluB2           | 0.368                  | 0.000      |
| Cluster2caprateB1 | -291.101               | 0.000      | Cluster2caprateB2 | -155.632               | 0.000      |
| Cluster3caprateB1 | -350.173               | 0.000      | Cluster3caprateB2 | -357.468               | 0.000      |
| PopulationDensity | -0.004                 | 0.004      | PopulationDensity | -0.007                 | 0.000      |
| R                 | 0.710                  |            | R                 | 0.768                  |            |
| R <sup>2</sup>    | 0.505                  |            | R <sup>2</sup>    | 0.590                  |            |
| Durbin-Watson     | 0.628                  |            | Durbin-Watson     | 0.780                  |            |
| F                 | 96.529                 | 0.000      | F                 | 136.344                | 0.000      |

Dependent variable: Market value of the supply in €/m<sup>2</sup> for B1 and B2

EvaluB1: is the net present value of B1 apartments for all parishes analysed

EvaluB2: is the net present value of B2 apartments for all parishes analysed

Cluster2caprateB1: is the cap rate of B1 apartments that belong to cluster 2 (in relation to cluster 1)

Cluster2caprateB2: is the cap rate of B2 apartments that belong to cluster 2 (in relation to cluster 1)

Cluster3caprateB1: is the cap rate of B1 apartments that belong to cluster 3 (in relation to cluster 1)

Cluster3caprateB2: is the cap rate of B2 apartments that belong to cluster 2 (in relation to cluster 1)

Population Density: is the population density of the Lisbon parishes under analysis

*Analysis of the parishes of Porto.* Table 5 presents the average values of rental income in €/m<sup>2</sup>, standard deviations, clusters and average rental income of clusters for Porto parishes that have data available for B1 and B2 apartments. As previously mentioned, a statistically significant difference exists between the average rental incomes of B1 apartments (8.03 €/m<sup>2</sup>) and B2 housing (6.45 €/m<sup>2</sup>). It is equally important to mention that, for all parishes, the average rental income of the B1 category is greater than for the B2 category.

As shown in Table 5, the agglomeration method resulted in the formation of three clusters for B1 and B2 apartments (Fig. 5, Fig. 6, Fig. 7, Fig. 8). A clear heterogeneity exists among parishes included in each cluster, indicating that the behaviour of rental income is different for each of the analysed categories. The differences for Clusters 1, 2 and 3 – for both types of apartments – are statistically significant at a significance level of 1%.

Table 5

**Average (€/m<sup>2</sup>) and standard deviation of rental income for Porto parishes**

| <b>B1</b>       |                      |                                  |                      |                                  | <b>B2</b>        |                      |                                  |                      |  |
|-----------------|----------------------|----------------------------------|----------------------|----------------------------------|------------------|----------------------|----------------------------------|----------------------|--|
| <b>Parishes</b> | <b>Ave-<br/>rage</b> | <b>Stand<br/>Devia-<br/>tion</b> | <b>Clus-<br/>ter</b> | <b>Cluster<br/>Ave-<br/>rage</b> | <b>Parishes</b>  | <b>Ave-<br/>rage</b> | <b>Stand<br/>Devia-<br/>tion</b> | <b>Clus-<br/>ter</b> | <b>Clus-<br/>ter<br/>Ave-<br/>rage</b> |
| Nevogilde       | 9.94                 | 1.27                             | 3                    | 9.62                             | Foz do Douro     | 8.35                 | 0.60                             | 3                    | 8.31                                   |
| Foz do Douro    | 9.29                 | 0.75                             |                      |                                  | Nevogilde        | 8.27                 | 0.65                             |                      |  |
| Aldoar          | 8.76                 | 1.35                             | 2                    | 8.76                             | Aldoar           | 7.32                 | 0.43                             | 2                    | 7.05                                   |
| Lordelo Douro   | 8.15                 | 0.56                             |                      |                                  | Lordelo do Douro | 6.86                 | 0.51                             |                      |  |
| Ramalde         | 7.88                 | 0.64                             | 1                    | 7.48                             | Massarelos       | 6.97                 | 0.57                             | 1                    | 5.34                                   |
| Massarelos      | 7.84                 | 0.56                             |                      |                                  | Cedofeita        | 5.77                 | 0.54                             |                      |  |
| Cedofeita       | 7.58                 | 0.56                             |                      |                                  | Ramalde          | 5.74                 | 0.46                             |                      |  |
| Santo Ildefonso | 7.16                 | 0.56                             |                      |                                  | Paranhos         | 5.20                 | 0.39                             |                      |  |
| Paranhos        | 7.10                 | 0.64                             |                      |                                  | Bonfim           | 5.06                 | 0.84                             |                      |  |
| Bonfim          | 6.63                 | 0.88                             |                      |                                  | Santo Ildefonso  | 4.94                 | 0.48                             |                      |  |
| <b>Average</b>  | <b>8.03</b>          | <b>0.78</b>                      |                      |                                  | <b>Average</b>   | <b>6.45</b>          | <b>0.55</b>                      |                      |  |

Table 6 presents the average values, standard deviations and cap rates of the clusters for Porto parishes, which resulted in three clusters for both B1 and B2 housing. As previously mentioned, the average cap rate values for B1 apartments are greater than for B2. Moreover, this is valid for all Porto parishes. The differences between the cap rate values for Clusters 1, 2 and 3 – for both types of housing – are statistically significant with a confidence level of 99%.

Table 6

Average (%) and standard deviation of cap rates for Porto parishes

| B1               |             |                 |         |                 | B2               |         |                 |             |                 |  |  |
|------------------|-------------|-----------------|---------|-----------------|------------------|---------|-----------------|-------------|-----------------|--|--|
| Parishes         | Average     | Stand Deviation | Cluster | Cluster Average | Parishes         | Average | Stand Deviation | Cluster     | Cluster Average |  |  |
| Ramalde          | 6.21        | 0.61            | 3       | 6.21            | Lordelo do Douro | 5.12    | 0.34            | 3           | 5.07            |  |  |
| Aldoar           | 5.98        | 0.88            | 2       | 5.98            | Massarelos       | 5.11    | 0.40            |             |                 |  |  |
| Cedofeita        | 5.76        | 0.50            | 1       | 5.42            | Foz do Douro     | 5.04    | 0.35            |             |                 |  |  |
| Lordelo do Douro | 5.71        | 0.47            |         |                 | Aldoar           | 5.01    | 0.59            | 2           | 4.92            |  |  |
| Santo Ildefonso  | 5.67        | 0.63            |         |                 | Cedofeita        | 4.93    | 0.52            |             |                 |  |  |
| Paranhos         | 5.46        | 0.56            |         |                 | Ramalde          | 4.91    | 0.46            |             |                 |  |  |
| Massarelos       | 5.25        | 0.33            |         |                 | Nevogilde        | 4.56    | 0.31            | 1           | 4.47            |  |  |
| Bonfim           | 5.06        | 0.96            |         |                 | Santo Ildefonso  | 4.54    | 0.60            |             |                 |  |  |
| Foz do Douro     | 5.00        | 0.40            |         |                 | Paranhos         | 4.42    | 0.53            |             |                 |  |  |
| Nevogilde        | 4.99        | 0.57            |         |                 | Bonfim           | 4.35    | 0.90            |             |                 |  |  |
| <b>Average</b>   | <b>5.51</b> | <b>0.59</b>     |         |                 |                  |         | <b>Average</b>  | <b>4.80</b> | <b>0.50</b>     |  |  |

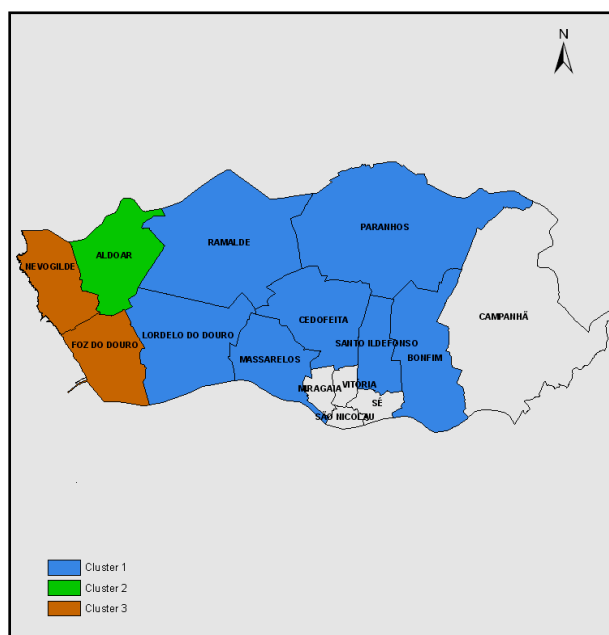


Fig. 5 – Representation of rental income clusters for B1 properties for the parishes of Porto

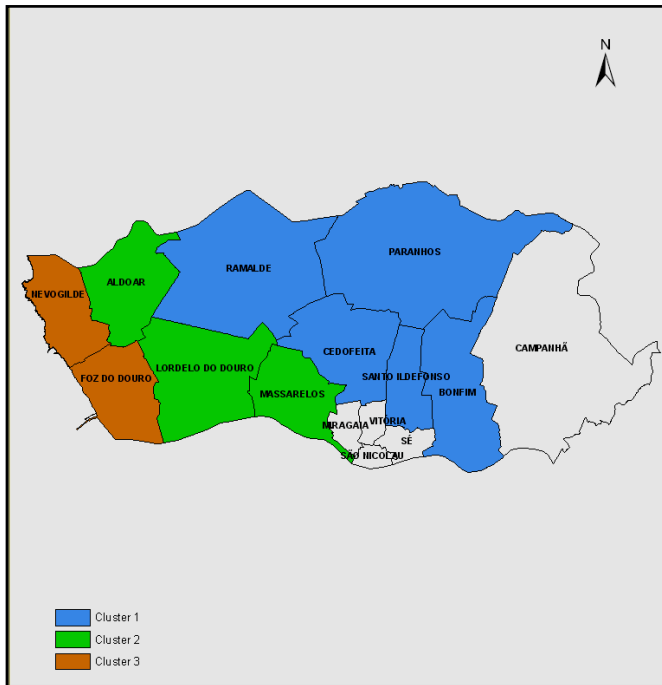


Fig. 6 – Representation of rental income clusters for B2 properties for the parishes of Porto

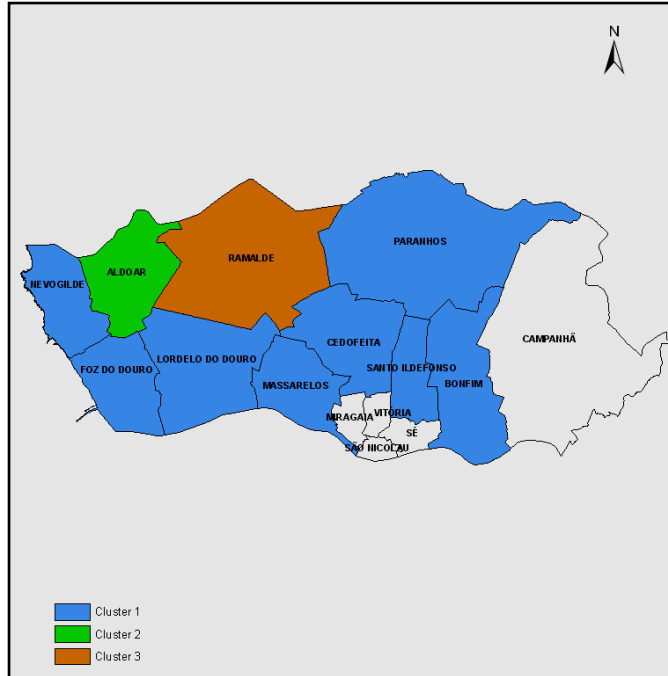


Fig. 7 – Representation of cap rate clusters for B1 properties for the parishes of Porto

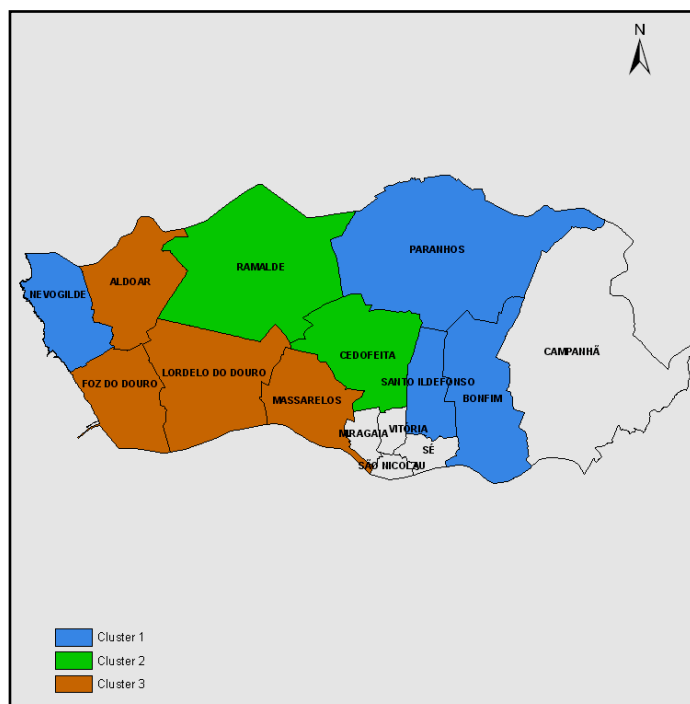


Fig. 8 – Representation of cap rate clusters for B2 properties for the parishes of Porto

The Pearson correlation between the average values of the rental income and cap rates for Porto parishes for B1 apartments is -0.226 and for B2 housing, 0.528, which are clearly different to the values previously encountered for the Lisbon municipality. A strong association exists between the rental income and the cap rates for B2 apartments and a negative association between these values for B1 apartments.

The results for the regression concerning B1 and B2 apartments in Porto are presented in Table 7. Similar to what occurred in Lisbon, both models are robust for B1 and B2. However, the devaluation is lower for the B1 and B2 in the market in Porto than in Lisbon, which reflects the higher prices of apartments in Lisbon when compared to the prices of apartments in Porto. The model 1 for B1 housing is robust, given that the dummy variables Cluster2caprateB1 and Cluster3caprateB1 are based on Cluster 1 of B1 cap rates. In this manner, compared with Cluster 1, Cluster 2 has a devaluation of €145.928 and Cluster 3 has a devaluation of €247.105. In the model2 for B2 housing, the dummy variables Cluster2caprateB2 and Cluster3caprateB2 are based on Cluster 1 of B2 cap rates. Thus, compared with Cluster 1, Cluster 2 has a devaluation of €107.212 and Cluster 3 has a devaluation of €117.420.

When comparing to determination coefficients for Porto and Lisbon, one can conclude that they are higher for Porto ( $r^2=0.748$ , for B1;  $r^2=0.814$ , for B2) than for Lisbon ( $r^2=0.505$ , for B1;  $r^2=0.590$ , for B2). This means that both markets are not only different but also there are unobserved variables for Lisbon that need to be accounted for in future research.

Table 7

**Regression models for B1 and B2 apartments for Porto parishes**

|                   | Model1 (B1) | sig   |                   | Model2 (B2) | sig   |
|-------------------|-------------|-------|-------------------|-------------|-------|
| Constant          | 1601.046    | 0.000 | Constant          | 1061.406    | 0.000 |
| EvalUB1           | 0.409       | 0.000 | EvalUB2           | 0.607       | 0.000 |
| Cluster2caprateB1 | -145.928    | 0.000 | Cluster2caprateB2 | -107.212    | 0.000 |
| Cluster3caprateB1 | -247.105    | 0.000 | Cluster3caprateB2 | -117.420    | 0.000 |
| PopulationDensity | -0.078      | 0.006 | PopulationDensity | -0.044      | 0.000 |
| R                 | 0.865       |       | R                 | 0.902       |       |
| R <sup>2</sup>    | 0.748       |       | R <sup>2</sup>    | 0.814       |       |
| Durbin-Watson     | 0.687       |       | Durbin-Watson     | 0.740       |       |
| F                 | 114.804     | 0.000 | F                 | 169.538     | 0.000 |

Dependent variable: Market value of the supply in €/m<sup>2</sup> for B1 and B2  
 EvalUB1: is the net present value of B1 apartments for all parishes analysed  
 EvalUB2: is the net present value of B2 apartments for all parishes analysed  
 Cluster2cap rateB1: is the cap rate of B1 apartments that belong to cluster 2 (in relation to cluster 1)  
 Cluster2cap rateB2: is the cap rate of B2 apartments that belong to cluster 2 (in relation to cluster 1)  
 Cluster3cap rateB1: is the cap rate of B1 apartments that belong to cluster 3 (in relation to cluster 1)  
 Cluster3cap rateB2: is the cap rate of B2 apartments that belong to cluster 2 (in relation to cluster 1)  
 Population Density: is the population density of the Porto parishes under analysis

**Conclusions**

The results yield clear conclusions. The Lisbon and Porto housing markets are relatively volatile, and a clear difference between these markets exists not only on a spatial level but also between the studied housing categories. Moreover, the model of frictionless markets in which the investor sentiment is set aside is far from applicable in the Portuguese housing market.

B1 and B2 apartments have different behaviours. While, for B2 housing, rental income and cap rates are positively correlated in Porto (0.528) and Lisbon (0.385), rental income and cap rates for B1 apartments are positively correlated in Lisbon (0.288) but negatively correlated in Porto (-0.226). The correlation for B2 apartments for Porto is clearly almost 40% larger than the correlation found for Lisbon, which indicates that the Porto's B2 market is much more appealing to investors than the Lisbon's B2 market is. In contrast, Porto's B1 apartment market can be considered overvalued when compared with Lisbon's B1 market.

Both the correlation and determination coefficients obtained from the regression models are lower for Lisbon than for Porto. Similarly, the coefficients are lower for B1 housing as compared with B2 apartments. The conclusion can be drawn that the B2 market is much more homogeneous than the B1 market both in Lisbon and Porto, clearly indicating that they are different markets in regard to both housing categories and areas.

These differences between Lisbon and Porto can be explained by two different aspects. The first is based on a geographic perspective. While Lisbon has experienced an expanding development from the core to the outer districts, underpinned by important events that brought massive investments to the city, Porto has remained relatively homogeneous, with important rehabilitation policies, with a set of complementary small cities having developed nearby, as reported by Afonso and Melão (2007). This difference in geographic expansion has implications at a social level, as B2 apartments are highly sought after by young families. Thus, the B2 category could be associated with low-risk investments, given the demand from residents who are simultaneously investors and consumers looking to invest based on the resale option and overconfidence theories (Scheinkman and Xiong 2003, Hong et al. 2006), where B2 owners

believe that future dividends are going to increase and potential investors are expecting the financial crisis to settle in and buy at lower prices.

However, the differences obtained for B1 apartments in Lisbon and Porto might be better explained by two other arguments. First, B1 housing is sought by a relatively diverse group that involves young or financially-constrained individuals, and Lisbon has the largest single-parent family market in Portugal (Ferreira 2010). Together with the Lisbon Expo, this might have ignited the Lisbon housing market for B1 apartments. This implies that the demand variability (i.e. both high and low quality apartments) is passed on, affecting the variability of returns (i.e. both high and low rental income), which results in a negative correlation in Porto but a positive one in Lisbon.

Another explanation for the differences between Porto and Lisbon might be the fact that Lisbon has a larger historical centre than Porto that may negatively influence the cap rates for Lisbon as the historical centre is sought for commercial purposes, associated with a low risk investment (Couto et al. 2006).

In terms of B2-type apartments, the different results between Porto and Lisbon can be further explained by the social homogeneity of Porto, which has the predominance of more advantaged socioeconomic classes, with higher concentrations of highly-qualified individuals (Afonso and Melão 2007). This is not the case in Lisbon, where the problem of old deserted housing (Vilaça and Guerra 1994) has been addressed with new housing projects and strategies (Ferreira 2010, Pereira 2013). Thus, the high rental income of B1 housing in Porto has led to low cap rates, inverting the relationship between rental income and cap rates.

This study's limitation lies in the fact that values were only obtained for four years (2006–2009) – the only ones available for this research – all referring to the post-boom years of the Portuguese housing market, a period of economic volatility in which the global financial crisis strongly impacted the Portuguese economy with negative consequences for the housing market.

In addition, only the two principal Portuguese cities were studied, Lisbon and Porto, and only two categories were studied, B1 and B2 apartments. Including B3 housing could bring added value to future studies, as B3 potential owners, being, at present, a more mature segment, may display a much more stable behaviour given that they belong to the family investment segment.

In regard to future research, interesting results could be attained by analysing these housing markets further by considering property age, as this would allow researchers to examine how this variable influences the market value of properties. In addition, future studies could find it worthwhile to analyse the degree to which positive and negative externalities play important roles in the housing evaluation and the ways that these factors differ between municipalities. Moreover, researchers could get significant results from separating social-oriented housing projects from privately owned properties to examine the differences in their economic behaviour.

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## ECONOMIC MEASUREMENT OF OPTIMAL CITY SIZE: THE CASE OF WEST SUMATRA, INDONESIA

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**Abstract:** This is an empirical study of economic measurement of the optimal size of seven cities in West Sumatra region, Indonesia. The empirical findings are quite interesting since the calculated optimal city size does not result in a single measure as mostly previous studies found, but they vary in accordance with the economic approaches used. The optimal city size measured by using the maximum profit approach would have been larger in size compared to those measured by the minimum cost and maximum net benefit approaches. Meanwhile, the cities measured by using the maximum net benefit have larger size than those of the minimum cost. Unlike previous studies, the measurement of optimal city size in this study is performed in terms of population density rather than the total population, in order to consider the influence of land area to the optimal city size. Moreover, by using the population density, the optimal city size becomes a relative index which enables us to compare it with the related size in other regions.

**Key Words:** *urban growth, optimal city size, population density, economic measurement, West Sumatran cities.*

### Introduction

The general phenomenon of the national demographic trend, both in advanced as well as developing countries, is characterized by high rates of urbanization. The same thing also occurs in Indonesia, including the West Sumatra region, where about fifty years ago more than 75% of the population lived in rural areas, while now more than half of the population lives in urban areas. Such an increased urbanization rate makes the urban population growth to advance relatively fast, resulting in a very high total population in some cities. However, if the total urban population is too large (*over-urbanization*), several negative impacts may arise and influence the city's welfare conditions. Such negative impacts include: high unemployment and poverty rates, increased traffic congestions, spread-out slump areas and increased urban criminality. This phenomenon arises the question of how big the urban population size should be in order to satisfy the government as well as the community's preferences?

The optimal city size refers to a suitable size of the city's population under certain economic, social or environment conditions. This study focuses only on the optimal economic conditions to achieve good governance as well as the society development objectives. With respect to economic objectives, the analysis in this study focuses on three major aspects: the minimum cost, the maximum net benefit and the maximum profit. These three economic criteria are important for formulating the urbanization policy to avoid the possibility of over-urbanization which may create some negative impacts to the economic and social life of the city. Moreover, it has also some implications on the long-term city development directions as well as on its environmental protection. The city size measurement in this study used the population density as a determining variable rather than the total population as previous studies did, in order to consider the influence of land area on the optimal city size.

The main objective of this study is to provide an empirical measurement of the optimal city size

from an economic approach. This analysis is considered important in two main aspects: *first*, it provides the analysis of the optimal city size from 3 economic points of view such as the minimum costs, the maximum net benefit and the maximum profit, which have some policy implications. The other existing studies, such as Hitzschke (2011), Camagni et al. (2013) and Kim et al. (2014), mostly concentrated on the cost, benefit and efficiency approaches, but omitted the maximum profit approach. *Second*, following Harris and Ioannides (2000), this study provides the measurement of the optimal city size based on the population density rather than on the total urban population in order to be able to consider the influence of the large variations in the geographical area of the city. This may be considered as an alternative measurement of the optimal city size since most of the past studies measured it based on the total urban population.

#### *Survey of Related Literature*

It is reasonable enough to say that Alonso (1971) was the famous scholar who provided a pioneering theoretical work on the analysis of optimal city size from the economic point of view. He raised an interesting and challenging research problem related to the question of “how big is too big” and “how big is big enough”. Such a question is interesting because it creates a particular analysis for urban economic growth and it provides some important policy implications with respect to urban strategic development as well as urbanization control. Some years later, Richardson (1978) extended the theory with a more realistic analysis by changing all the curves to non-linear forms, although the basic idea remains the same. These two theories are used in this study as theoretical framework for measuring the population number of the optimal city size for each economic approach. Moreover, this theoretical framework is also used to test the Alonso-Richardson hypothesis on the rank order for each optimal city size calculated in relation to its economic orientation.

The main idea within the Alonso-Richardson theoretical framework is to analyse the optimal city size from an economic point of view. In this case, the measurement of optimal city sizes focuses on three economic approaches: i.e. minimum average cost, maximum net benefit and long-run maximum profit. The long-run maximum profit is an economic condition where the profit is zero. These three approaches give different measurements of the optimal city size due to different economic objectives. The minimum cost approach measures the optimal city size based on the criteria of the minimum average cost of the city operational management. This approach may be relevant to objectives of the local government to minimize the use of the national budget. The net benefit approach, on the other hand, measures the optimal city size in terms of the difference between the total benefit provided for the inhabitants with the total operational cost spent by the city administration. This approach may be interesting for the society objectives to maximize the social welfares. However, the maximum profit approach measures the optimal city size based on the criteria of the equalization of marginal cost and marginal benefit. This approach may be suitable for the city businessmen who seek maximum profits for their business activities.

Moreover, this theoretical framework also includes an interesting hypothesis that the optimal city measured based on the long-run maximum profit approach would have a larger size than those measured based on the maximum net benefit. Furthermore, the optimal city size measured based on the maximum net benefit would have a larger size than those measured based on the minimum cost approach (Table 1). Such a variation of the optimal city size is also closely related to the objectives of each approach. The city local government usually prefers a smaller city in order to minimize the per capita local budget. The inhabitants, on the other hand, usually prefer to have medium sized cities in order to avoid the negative impacts of over-urbanization. But, businessmen usually prefer large city sizes to get bigger effective demand for their own business activities. We may call this proposition as the *Alonso-Richardson hypothesis* which will also be empirically tested in this case study of the West

Sumatra region in Indonesia.

As indicated in Figure 1, there exists four optional curves as basis of analysis representing the Average Cost (AC) and Marginal Cost (MC) for operating the city, as well as the Average Benefit (AB) and Marginal Benefit (MB), resulting from the economic activities in the cities. Based on the shape of these four curves, there exist several points in the horizontal line which have important economic measurements for the optimal city sizes. First, point  $P_a$  represents an optimal city size at minimum average cost. *Second*, point  $P_b$  indicates the optimal city size at maximum average net benefits conditions where the difference between AB and AC is the largest. *Third*, point  $P_c$  refers to the optimal city size at the long-run maximum profit condition where  $AC=AB$ . These three important points provide different methods for calculating the number of people at optimal city sizes with different results.

The Alonso-Richardson optimal city size model presented in Figure 1 is quite interesting in three aspects: *First*, the analysis provides the optimal city size estimations using the three standard microeconomic analyses. This may answer the Camagni et al. (2013) findings that the optimal city size may not be a single measure. *Second*, the optimal city size in this study uses the population density (PD) rather than the total city population as measurement. Such a measurement is important to take into account the large variation in the city area which also determines the optimal city size. Moreover, the measurement of optimal city size based on population density would have some implications with respect to transportation, housing and environment that are important elements of urban growth. *Third*, it has some important policy implications for the city development orientation and urbanization control. Therefore, it seems to be useful to make an empirical study for the case of West Sumatra cities to measure the optimal city size as a basis for the urban policy formulation.

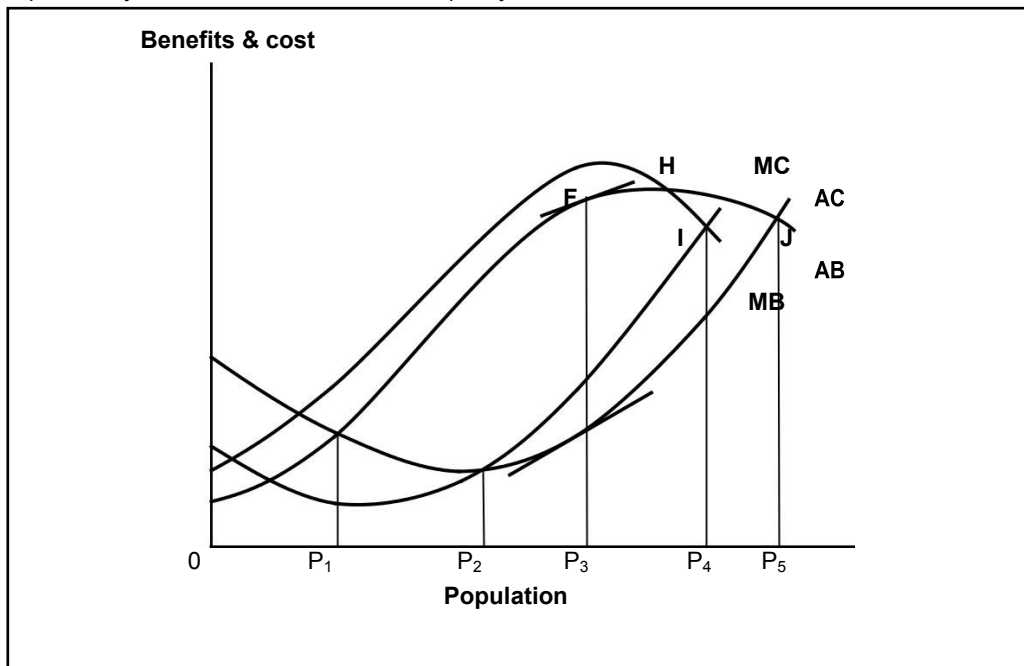


Fig. 1 – Optimal City Size in the Alonso and Richardson Model

A more formal formulation of the optimal city size was introduced by Arnott (1979) by using the spatial structure and utility maximizing frameworks. He developed a spatial theory of the optimal city size based on the residential location theory. Attention is focused on the necessary conditions for the optimal city size which specifies the relationship between the economic aggregates in the city. Moreover, Arnott and Stiglitz (1979) included variables of land rent and expenditures for the local public goods to the model. On the other hand, Begovic (1991) provides an alternative to the economic approach of the optimal city size by introducing the agglomeration as an explaining variable. The main argument was that the size of a city is mainly determined by the existence of agglomeration economies which encourage economic activities as well as manpower to stay in particular urban areas. Such movements of economic activities and man power will also encourage population to move to that city, which makes its total population to increase faster. The estimation of the optimal city size in this study was based on the linear quadratic regression between the city agglomeration economies and its total population.

The above theoretical framework measures the optimal city size in terms of the total population regardless the city's land area. Such a measurement may not exactly true because the size of the land area would also influence the measurement of the optimal city size. By using the population density as explanatory variable, Harris and Ioannides (2000) statistically proved that population density influenced significantly the metropolitan productivity, and hence the optimal city size. This suggests that a more relevant measurement of the optimal city size is by using the population density in order to take into account the influence of the size of land area, and our present study also follows this idea.

There are several interesting points related to the recent studies on the measurement of the optimal city size conducted in the last five years. Hitzschke (2011) measured the optimal city sizes of German Cities from the efficiency perspective. He used the *Data Envelopment Analysis* (DEA) as the method of measuring the production efficiency of cities in terms of scale efficiency. The optimal city size is determined by the maximum point of the quadratic functional relationship between scale efficiency and the total city population size. In this case the optimal city sizes are measured for four geographic areas: West, East North and the Southern part of the country. The empirical findings indicated that the optimal city size for the German cities is around 200 000 people, which is relatively close to the average values of the current actual population size of German cities.

On the other hand, Yarmohammadian et al. (2012) estimated the optimal and sustainable size of metropolitan cities in Iran and gave a separate estimation for each city. Following Begovic (1991), this study used agglomeration as the main factor affecting urban growth although, at the same time, it also creates some negative impacts with respect to environmental problems. The optimal city size in this study was estimated for four metropolitan cities in Iran by using the so called surplus function including the pollution externalities. Interestingly, the findings showed that cities in Iran would be overpopulated to the access of 71% of its optimum size and it has also exceeded its sustainable size by five percent.

Mizutani et al. (2012) measured the optimal city size based on cost and benefit, but also considering social costs related to pollution as an important component of cost structures. The main purpose of this study was to estimate the optimal city size for attaining the total surplus defined as the difference between the total benefit and total cost. The measurement method used in this study was the log-linear cross-section regression using the data set of Japanese metropolitan areas for the year of 2000. This study concluded that the optimal (ideal) cities are those which have smaller populations, in order to maintain the environmental quality. However, it is realized that some other factors should be considered in order to have better measurements.

Camagni et al. (2013), on the other hand, measured the optimal population sizes of 59 European cities by using the urban cost and benefit as determining variable in the method of measurement. Moreover, this study also included some additional regional variables such as environment quality, urban form and inter-urban cooperation networks. It was also suspected in the study that the difference between the actual urban population size and the predicted optimal (equilibrium) size may explain the efficiency orientation of government policies. Moreover, they also found that other measurements of the optimal city size by using the marginal cost and marginal benefit as well as its own cost were abandoned. The results in this study allow the identification of the city specific equilibrium size. Interestingly, this study also concluded that the difference between the actual urban population and the equilibrium one predicted by the model can be explained by the good or bad governance of the city management performances.

Kim et al. (2014) have studied the optimal city size in South Korea by using the dynamic *Interregional Computed General Equilibrium* (ICGE) as the method of estimation. Unlike the above two studies, the main objective was to find the optimal urban size to maximize the national economic growth by using the cost and the benefit of urban economic activities in terms of added industrial value. The empirical findings of this study indicated that the national per capita income would be maximized if the optimal size for the South Korean cities reached the percentage of urban population (*urbanization rate*) of about 39% on the short term and 35% on the long-term. However, the government seems to be likely to provide incentives to maintain the optimal urban size at about 40%.

Marques et al. (2015) estimated the optimal size of the Tasmanian local government by using a non-parametric technique on the share of input Data Envelopment Analysis (DEA) to maximize the efficiency of local government. The author indicated that the principal advantage of this technique is that it not only provides an overall estimate of efficiency but it also allows for the estimation of 'partial efficiencies' and 'cost shares' when one input is shared among multiple outputs. The result of the study indicated that water supply and sewage services were efficient while the activities related to community health and safety system needed improvement. However, the elimination of these inefficiencies would result in greater cost saving for the Tasmanian local government.

Burnett (2016) conducted a study on the optimal city size of a medium city size in Fort Collins, Colorado, the United States by using the CGE model. This study statistically tested the hypothesis of the inverted-U of real income per worker within the optimal city size by using pecuniary externalities given the unequal distribution of land and capital income to resident households. The findings show that household distribution is skewed towards upper income households of overpopulated cities. The policy implications of this study suggested that urban sprawl, commuting increase, and export oriented retail growth reduce overpopulation, leading to efficiency gains, as export growth does for the services and the total factor productivity growth for manufacturing.

### **Methodology**

Referring to the Alonso-Richardson model, the measurement of the optimal city size is based on the city total population. Such a measurement actually has a weakness because it does not take into account the large variation in the city land areas. The optimal city size may tend to be larger if the city has a larger land area than those cities with smaller land areas. Since the population density is a relative index than such a measurement of the optimal city size, it may be compared with the similar studies in other regions or countries. Therefore, a more adequate measurement of the optimal city size is in terms of population density rather than the total population as done by Hitzschke (2011) and Camagni et al. (2013) in the previous studies. Considering such a weakness, this study measures the optimal city size based on population

density that is the total city population divided by the total land area.

Before the optimal city size can be calculated, it is needed to estimate some regression equations on the relationship between each economic variable with the population density of the city. Given the theoretical framework mentioned above, we need the estimation of two functional forms: the Average Cost Function and the Average Benefit Functions. The Average Cost is measured in terms of total operational cost of the city per unit of population. Similarly, the Average Benefit is measured in terms of per capita *Gross Domestic Regional Product* (GRDP) of the city in which the value of products and services are produced by the city. GRDP is used as proxy for the benefit of the inhabitants since the people need product and services to satisfy their needs. Moreover, GRDP may be also used as proxy for employment availability in the city which is also necessary for the life of the inhabitants.

Since the available data collected is only for 14 years, the measurement of those two curves should not be performed by using the time series method because of the lack number of observations. Due to such data conditions, the estimation of those two curves was performed in terms of pooled data system that is the combination of time series and the cross section method of regression. The data comprise with the existing of 7 cities in the West Sumatra region, and the available time series data for 14 years. However, there were 3 missing data because the city of Pariaman was established in 2004. Therefore, the number of observations in the regression estimation are 95 which seems to be rather sufficient to comply the necessary statistical requirements.

The optimal city size from the economic point of view could be estimated using 3 approaches. *First*, the Minimum Cost Approach, by estimating the optimal city size at minimum average cost (AC) point. *Second*, the Net Benefit (NB) Approach by estimating the optimal city size at the point where the difference between the average benefit (AB) and the average cost (AC) is maximum. *Third*, the Maximum Profit Approach, by estimating the optimal city size when the marginal benefit is equal to the marginal cost. Each approach would have its specific curve derived from the Alonso-Richardson theoretical framework described earlier. However, considering Harris and Ioannides (2000), this study uses population density (PD) instead of total population as the explanatory variable to take into account the influence of land areas into the measurement of optimal city size.

To be able to estimate the optimal city size based on the minimum cost approach, we have to estimate the Average Cost Function first, by using the combination of time series and the cross-section regression (pooling data system) to increase the number of observations. Data used are in the period of 2001-2014 for 7 cities. This period was selected because the Indonesia government implemented the fiscal decentralization policy which started in the year of 2001 and it has significantly changed the urban fiscal structure in Indonesia. The Average Cost Function to be estimated is the function of the city population density (PD) and it is represented in the quadratic form as it follows:

$$AC_{it} = \alpha_0 + \alpha_1(PD)_{it} + \alpha_2[(PD)_{it}]^2 + e_{it} \quad (1)$$

where  $i$  is city and  $t$  is time. Coefficient of  $\alpha_i$  is the regression coefficients and  $e_t$  is the error terms. To be able to get the minimum point, it is expected that the coefficient of  $\alpha_2$  has to be

of negative sign and the coefficient of  $\alpha_1$  has to be positive. Given this regression results, the optimal city size can be calculated by taking the first derivative of equation (1) and equated to zero to get the following optimal city condition for the minimum cost approach:

$$P_{mc} = \frac{-\alpha_1}{2\alpha_2} \quad (2)$$

As mentioned above, estimating the optimal city size based on the maximum net benefit approach can be computed by the largest difference between the Average Benefit (AB) and the Average Cost (AC) curves. For this purpose, at the beginning, we have to formulate the AB curve within the quadratic form and also the population function, as it follows:

$$AB_{it} = \beta_0 + \beta_1(PD)_{it} + \beta_2(PD)_{it}^2 + e_{it} \quad (3)$$

To be able to get the maximum point, it is expected that the coefficient of  $\beta_1$  to be of positive sign and the coefficient of  $\beta_2$  has to be of negative sign. By taking the slope of the AB curve in equation (2) and the AC curve in equation (1) and setting both of them to be equal, then we have the following optimal condition:

$$\beta_1 + 2\beta_2(PD)_{it} = \alpha_1 + 2\alpha_2(PD)_{it} \quad (4)$$

Furthermore, by solving the equation (4) with respect to  $P^{D_{it}}$  we have the formula to calculate the optimal city size using the net benefit approach  $P_{NB}$  as it follows:

$$PD_{nb} = \left[ \frac{(\beta_1) - (\alpha_1)}{(2\alpha_2 + 2\beta_2)} \right] \quad (5)$$

The necessary condition to get the optimal city size based on the Long-run Maximum Profit Approach where the profit is zero is when the average cost is equal to the average benefit (AC=AB). Given this condition, by equating the average cost in equation (1) and the average benefit in equation (3), we have the following equation:

$$\alpha_0 + \alpha_1(PD)_{it} + \alpha_2(PD)_{it}^2 = \beta_0 + \beta_1(PD)_{it} + \beta_2(PD)_{it}^2 \quad (6)$$

Solving the equation (6) with respect to the population density (PD), we have the following measurement of the optimal city size, as it follows:

$$PD_{mp} = \frac{(\beta_1 - \alpha_1) \pm \sqrt{(\alpha_1 - \beta_1)^2 - 4(\alpha_0 - \beta_0)(\alpha_2 - \beta_2)}}{2(\alpha_0 - \beta_0)} \quad (7)$$

Equation (7) would have two values, with either positive or negative results. Since the value of population density is never negative, we use the positive result as calculated for the optimal city size based on the long-run maximum profit approach.

#### Highlight of West Sumatra Region and Cities

This study uses cities of West Sumatra region in Indonesia as case study. This mountainous region lies on the western coast of Sumatra island which covers an area of 42 297 km<sup>2</sup>. By 2014, the region's population was of 5 131 882 people, with an annual growth rate of 1.33%. The population belongs mostly to the Minangkabau tribe of which Islam is the major religion. The main economic activities are agriculture, trade, services and small-scale industries. Moreover, there is a wide variation in the geographical conditions as well as employment structures across the region while some of the population works as fishermen or farmers and some others are engaged in the trade, the small scale industries and services. Such a geographical variation may influence the regional development process due to the different orientation of their major economic activities. The regional economic growth over the last fifteen years seems rather moderate and close to the national average, with an annual growth rate of about 5.2%.

The West Sumatra region has 7 cities of different sizes, their size ranging from less than 100 000 to almost 1 million people. The main urban economic activities are mostly in terms of small-scale industry, trade and services. The spatial structures of the cities vary either with respect to land areas or geographical conditions, as some cities lie in the coastal areas while some others in the mountainous areas. Padang is the capital city of the region which has the biggest total population of 889 561 people in 2014, but its population density is still relatively low because its land area is quite large. But the city of Bukittinggi has the highest population density although its total population is still relatively low due to the very small land area. The city of Sawahlunto, on the other hand, has the lowest population density due to the relatively small population but on a large owned land area. Table 1 provides several general characteristics of West Sumatran cities for the year of 2014.

As a region of a developing country, the per capita income of West Sumatra region was still relatively low, i.e. about US \$ 2,198 in 2014, while poverty and unemployment are still a major economic problem. The economic performance at city level is more or less the same. Padang, as the capital city and the main business centre, has the highest per capita income as well as the highest rate of economic growth. Similarly, the city of Bukittinggi, as the main tourism centre within the region, has also a relatively high per capita income and economic growth. However, Pariaman is a newly established city, which still has a low per capita income and a poor economic growth. Other cities, such as Solok and Payakumbuh, also have lower per capita incomes, but they experienced a relatively high economic growth which suggests that these cities seem to have a promising future economic performance.

Table 1

**General Characteristics of West Sumatran Cities (2014)**

| No. | City           | Total Population (People) | Land Area (Km <sup>2</sup> ) | Population Density (People/Km <sup>2</sup> ) | Per capita Income (US \$) | Economic Growth Rates 2000-2014 (%) |
|-----|----------------|---------------------------|------------------------------|--|---------------------------|-------------------------------------|
| 1   | Padang         | 889 561                   | 694,96                       | 1 280  | 3,148                     | 6.57                                |
| 2   | Solok          | 64 819                    | 57,64                        | 1 125  | 2,842                     | 6.00                                |
| 3   | Sawahlunto     | 59 608                    | 273,45                       | 218  | 3,013                     | 6.01                                |
| 4   | Padang Panjang | 50 208                    | 23,00                        | 2 183  | 3,288                     | 6.07                                |
| 5   | Bukittinggi    | 120 491                   | 25,24                        | 4 774  | 3,224                     | 6.18                                |
| 6   | Payakumbuh     | 125 690                   | 80,43                        | 1 563  | 2,251                     | 6.47                                |
| 7   | Pariaman       | 83 610                    | 73,36                        | 1 140  | 2,775                     | 5.99                                |

Source: West Sumatra Local Government, West Sumatra Facts and Figures 2014, Padang 2015

### Results and Discussion

Following the theoretical frameworks and methods of analysis described earlier, the first empirical result to be presented is in the form of the estimated quadratic regression results on the relationship between the average cost and the benefit cost functions with the population density. The use of population density as explanatory variable represents a special feature of this study since most of the previous studies used the total population as the independent variable. The optimal city size may then be estimated for each of the economic approaches used for these regression results. Table 2 presents the estimated average cost (AC) and the average net benefit (ANB) as a function of the city population density (PD). Data on the average cost used in this regression is the value of the city operational cost calculated from the realization of the local government budget minus the investment or the capital cost. The terms of operational costs in this study are referring to the annual expenses used to facilitate the

operational activities of a city, such as wages and salaries, administrative expenses and maintenance costs. Investment costs are excluded from the operational costs because they can be utilized more than one year. In this case, the city operational cost is calculated by reducing the total city budget with the investment expenditures. Moreover, data on the number of the city population as well as the land area are absorbed from the figures provided by the city administration offices.

Table 2

**Estimation of Quadratic Pooling Data Regression of the Average Cost and Net Average Benefit Equations of West Sumatra Cities (2001-2014)**

| Independent Variables and the Statistical Test | Average Cost Equation  | Average Benefit Equation |
|--|------------------------|--------------------------|
| Intercepts                                     | 2 343 048<br>(7 517)*  | 1 159 779<br>(26 790)*   |
| Population Density (PD)                        | -593.250<br>(-10.728)* | 4 004.636<br>(32 746)*   |
| Squared population Density (PD <sup>2</sup> )  | 0.121<br>(12.970)*     | -1.038236<br>(-39 104)*  |
| Coefficient of Determination (R <sup>2</sup> ) | 0,712                  | 0,986                    |
| Adjusted R <sup>2</sup>                        | 0,706                  | 0,985                    |
| F-Statistics                                   | 113.819                | 3280.557                 |
| Durbin Watson Statistics                       | 1.543                  | 1.168                    |
| Number of Observations                         | 95                     | 95                       |

Notes: Figures in the parentheses are t-statistics  
\*significant at 1 percent level

The estimated regression coefficient of  $\alpha_1 < 0$  and  $\alpha_2 > 0$  satisfies the u-shape curve of the average cost function. Similarly, the coefficients of  $\beta_1 > 0$  and  $\beta_2 < 0$  satisfy the inverse u-shape curve of the net benefit function. This indicated that the two functions satisfy the mathematical necessary condition of both average cost and net benefit functions. Moreover, all of the regression coefficients of both the average cost and the average net benefit are significant either at 5% and 1% level. Such a high significant level of the regression coefficients is also confirmed by the high values of the F-statistics. The coefficients of determination are also quite high, ranging from 0.756 to 0.986, which indicates that the population density is a suitable variable for the model. Moreover, the Durbin Watson Statistics lies between 1 and 2 which also indicates that the model does not contain a serious serial correlation problem. All of these statistical tests indicate that the estimated regressions are satisfactory for the statistical requirements.

Given the described regression results and following the equation (2) in the above methodology, we may then calculate the optimal city size in terms of population density instead of the total city population as mentioned in the Alonso-Richardson theoretical framework. For the minimum average cost approach, the calculated optimal city size is done by using the equation (2) where the optimal condition is a minimum AC. On the other hand, the maximum net average benefit approach is calculated by using the equation (3) where the optimal condition is when the slope of the AB curve is equal to the slope of the AC curve. Finally, the long-run maximum profit approach is measured by using the equation (3) where the optimal condition is when the average cost is equal to the average benefit.

Table 3 presents the calculated optimal city sizes for the seven cities in the West Sumatra region for each economic approach by using data from the year of 2001 to 2014. So that, the figure for population density at the optimal city size measured under the minimum cost approach for West Sumatran cities is found to be of 2 448 people/Km<sup>2</sup>. Moreover, the optimal city size measured under the maximum net benefit is found to be a little bit greater, i.e. of 2 507 people/Km<sup>2</sup>. However, the optimal city size measured under the long-run maximum profit is found much greater than the former two optimal measurements of the city size.

Table 3

**The Measurement of the Optimal City Size of West Sumatra Cities  
Using Three Different Economic Approaches**

| Alternative Economic Approaches                 | The Optimal Condition     | Optimal City Size (People/km <sup>2</sup> ) |
|---|---------------------------|---|
| Minimum Average Cost                            | Minimum AC                | 2 448                                       |
| Maximum Average Net Benefit                     | Slope of AB = Slope of AC | 2 507                                       |
| Long-run Maximum Profit (Zero Profit Condition) | AC=AB                     | 4 558                                       |

Two interesting empirical findings can be explained. *First*, the optimal city sizes measured by the population density vary in accordance to the used economic approach. This finding confirms the earlier conclusion made by Camagni et. al (2013) that the optimal city size may not be a single one. *Second*, the finding is also accepted the Alonso-Richardson hypothesis that the calculated optimal city size for the minimum average economic approach is smaller than the net average benefit as well as the long-run maximum profit approaches. Moreover, the optimal city size based on the average net benefit is smaller than the long-run maximum profit approach. *Third*, the estimation of the optimal city sizes is found to be more suitable by using population density as the determining variable rather than the total population as proposed by Hitzckhe (2011), Camagni et al. (2013) and Kim et al. (2014). The use of population density as determining variable is quite important to be considered in a wide range of land areas of the city. It also influences the measurement of the optimal city size as well as its policy implications. Moreover, the population density is a relative index which enables us to compare the empirical results with those found in other regions or countries.

*Implications to Urban Policies*

The policy implications of the optimal city sizes may emerge in three aspects. *First*, related to the urbanization control policy for the cities, they may apply to cities which already have population density exceeds in relation to the optimal city size. Such a policy is important to avoid the existence of over-urbanization which might create several negative impacts such as urban poverty, traffic congestion, increasing unemployment and reduced environmental quality (Capello and Camagni 2000). *Second*, related to the environmental policy, the cities with a high population density might have some negative impacts with respect to traffic congestion, pollution, and other environmental quality. *Third*, related to the urban development strategy, cities may have problems either with respect to the city spatial plan or their development orientation. Table 4 provides the comparison of the current population density with the optimal city sizes under several economic approaches.

*Urbanization Control Policy.* With respect to urbanization control policy, the measurement of the optimal city size has an important policy implication. Such a policy is necessary for those cities that have a population density over the calculated optimal city size, such as Bukittinggi, although the total population in the year of 2014 is still rather small, i.e. of 120 491 people. The reasons are that these cities have already experienced over-urbanization which may create some negative impacts to society life, such as a high unemployment rate as well as high

poverty incidents (Sovani 1964). The city of Padang, on the other hand, does not need to implement the urbanization control policy, although its population has already reached 889 561 people by the year 2014. Under the urbanization policy control, such possible negative impacts may be expected to be reduced in order to maintain a certain level of social welfare of the city. But for other cities in West Sumatra, the urbanization control policy may not be necessary yet because all of them, thus far, have not experienced over-urbanization.

Table 4

**Measured Optimal City Size in West Sumatran Cities Using the Three Economic Approaches (in Population Density)**

| City  | Minimum Cost Approach | Maximum Net Benefit Approach | Long-run Maximum Profit Approach | Population density 2014 (People/Km <sup>2</sup> ) | Total Population 2014 (People) |
|---|-----------------------|------------------------------|----------------------------------|---|--------------------------------|
| Padang  | U-u                   | U-u                          | U-u                              | 1 280   | 889 561                        |
| Solok   | U-u                   | U-u                          | U-u                              | 1 125   | 64 819                         |
| Sawahlunto  | U-u                   | U-u                          | U-u                              | 218   | 59 608                         |
| Padang Panjang  | U-u                   | U-u                          | U-u                              | 2 183   | 50 208                         |
| Bukittinggi   | O-u                   | O-u                          | O-u                              | 4 774   | 120 491                        |
| Payakumbuh  | U-u                   | U-u                          | U-u                              | 1 563   | 125 690                        |
| Pariaman  | U-u                   | U-u                          | U-u                              | 1 140   | 83 610                         |
| Estimated Optimal City Size (People/Km <sup>2</sup> ) | 2 448                 | 2 507                        | 4 558                            |   |                                |

Notes: U-u = Under Urbanization  
O-u = Over Urbanization

*Urban Long-term Development Policy.* Every city may have a different long-term development objective depending upon the economic, social and political purposes. Some cities may intend to pursue the objective to become a centre for government administration activities, and some others may intend to pursue the objective to satisfy the needs of their inhabitants. But, there are also many cities expected to be sufficiently large business centres to maximize the regional economic growth. Each of these long-term urban development goals certainly require different optimal city sizes to support their necessary economic and social needs.

Given such a different urban long-term development orientation, it seems to be useful to coincide it with the measurement of optimal city size. If the interest is just of the government administrative centre, then the relevant development orientation would be the minimum operational cost for the city. This implies that the optimal city based on the minimum cost approach seems to be more suitable for a development orientation. But, if the development objective is more related to the maximum social welfare of the urban population, then the average net benefit approach seems to be more suitable, and the optimal city size should be higher. However, if the main objective is to become a business city, then the maximum long-run profit approach would be more suitable and the optimal city size should be big enough to create sufficient demand for business expansion activities. Therefore, the optimal size for this city should be larger than those for the city size under the minimum cost and maximum net benefit. Moreover, if environmental quality is also considered within policy objectives, then the actual city size should be smaller than the optimal size.

*Urban Environmental Policy.* Finally, the measurement of the optimal city size gives also important implication to the environmental policy. Another important implication of the optimal

city size is with respect to efforts in maintaining the urban environment quality. The city, whose population density is above the calculated optimal city size, such as Bukittinggi city, should have a very tight control of the environmental quality. Such a policy is quite important to be able to maintain a certain level of the city environmental quality. But for that city which still has a population density below the optimal city size, it may have a rather easy control on the urban environment quality, although the total population has already been close to one million people such as the city of Padang. Environmental control policy will depend upon the type and degree of the externalities experienced by the city as well as the existing regulation in the country.

### Conclusion

This study measures the optimal city size from the three economic points of view: minimum operational cost, maximum net benefit and maximum long-run profit. Each economic approach may give different measurements of the optimal city size as well as its implications to the urban development policy. This confirms the results of the previous study made by Camagni et al. (2013) that the optimal city size may not be of a single measure. Moreover, the previous studies conducted by Camagni et al. (2013) and Kim et al. (2014) have already considered the first two approaches, i.e. the minimum cost and net benefit in the measurement of the optimal city size. Our present study extends the analysis to include the long-run maximum profit condition within the measurement of the city size which is quite important if business and economic growth become the main orientation of the urban development policy.

Unlike most of the previous studies, the optimal city size in this analysis is measured in terms of population density rather than of total population. The use of population density is considerably important to take into account the large variations in size of land areas and geographical conditions which also significantly influence the measurement of the optimal city size. Moreover, population density is a relative index which enables us to compare the empirical results with the related studies conducted in other regions or countries.

Due to a lack of available time series data for each city, the regression estimation in this study was conducted by using the *pooling data system* which gives a single measurement for the West Sumatra region and it represents the average values for all cities in the region. Ideally, the regression estimation should be conducted by using the time series method to get a single measurement of the optimal size for each city. This effort may be considerably important since the variations of land area, the geographical conditions, as well as the function and hierarchy of the city represent quite large challenges. Addressing all of them would be also our challenge for further research, in order to get a better measurement of optimal city sizes.

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## BOOK REVIEWS

### **ATTRACTING VISITORS TO ANCIENT NEIGHBOURHOODS. CREATION AND MANAGEMENT OF THE TOURIST- HISTORIC CITY OF PLYMOUTH, UK**

DANIEL BARRERA-FERNANDEZ, InPlanning, Groningen, The Netherlands, 2016,  
289 pp. ISBN 978-94-91937-19-4

**Reviewed by** FLORENTINA CRISTINA MERCIU,  
University of Bucharest, Romania

Daniel Barrera-Fernandez approaches an interesting topic related to the tourist attractiveness of the historic centre of a port city. Plymouth (UK) has a long urban evolution, marked by its military function, resulting in an important built and maritime heritage.

Conducting the topic in a logical manner, the first part of the book includes an introduction on the necessity to revitalize the urban historic centres through cultural tourism. The analysis starts, within the first chapter, with a detailed view on the cultural importance of the European urban historic centres and on the recent trends in their tourist valorisation.

The second part of the book, structured in four sections, is dedicated to a complex tourist assessment of Plymouth city, based on five relevant objectives: the evolution of heritage conservation policies and of policies dedicated to the management of the city's historic centre; current protection regulations and the role of the public administration in their implementation; the evolution of the heritage valorisation model; the current significance of tourist activities and the heritage role in constructing the city's tourist model; the actors involved in the tourist valorisation of the historic centre in relation to culture and heritage, tourism, urban planning and economic development.

A concise characterization of the city is used

by the author to argument its choice as a case study: Plymouth represents a medium size urban centre that is multifunctional (tourism, creative activities), having a peripheral position that didn't constitute a barrier for its tourist role, mostly that it is situated in the most visited region at national level, both by local and by foreign tourists. However, the city does not represent a traditional cultural destination as the city development was not initially influenced by the tourist activity. So that, the local public administration made efforts to construct a tourist product based on the celebration of significant events that influenced the city history. In time, the development of tourism was related to building a new city image – a cosmopolite city – following its adaptation to the current socioeconomic changes through developing a new economic activity: the port area was adapted to accommodate tourism, shopping, leisure, and creative activities, in completion of the city's cultural and urban tourism.

Chapter 1 is constructed on defining the urban historic centre as having two main traditional valences: aesthetics and historicity, completed by its value as identity and collective memory space. Given the fact that the cultural significance of an urban historic centre is constituted by the presence of historic monuments, their conservation and economic valorization through urban regeneration actions represents a priority. The economic valorization of urban historic centres should be

based on adaptive management and it can be directed through tourism activities. But, there is a need to pay attention to the possible negative effects that this economic activity may have on the heritage due to overusage. In this context, the British model of heritage protection is detailed as an example of good practices.

Chapter 2, called *Approach to the city of Plymouth*, is dedicated to an analysis on the case study's urban evolution. The city's favorable position in the south-western part of United Kingdom assured its access to both the English Channel and the Atlantic Ocean and it facilitated its contribution to the development of the British Empire through maritime exploration. The military function of the city's port surpassed its commercial activity as it has been a base for the Royal Fleet and it was once the largest naval base in Europe. Although there are still left some elements that remind of its military function (e.g. the Royal Artillery), most of the specific heritage of the port was destroyed during the second World War bombardments. The same situation affected also a part of the city historic centre and, after its reconstruction, an enclave of the post-war architecture was developed around two axes: north-south and east-west. The historic centre continues to include old original buildings from the medieval period while most of the city's built heritage owes its existence to the army (e.g. the old port). Starting from the '80s, the naval industry registered a gradual diminishment of its production which finally reduced significantly after 1990. The new socioeconomic context supposed the city's economic reorientation to tourist activities meant to valorize the urban built heritage.

Chapter 3 includes a first part focused to analyse the evolution of the conservation measures and of the Plymouth historic centre management. The second part, presents the current situation of heritage conservation and the local policies of historic monuments protection.

The penultimate chapter of the book, *Tourism in Plymouth's historic city*, presents the history of the city's tourism activities. The author distinguishes between four stages: 1. the period before the second World War when the

city of Plymouth was not a classic seaside resort, although it had several natural resources (mild weather, beaches). The city's attractiveness was related to transoceanic connections. Starting with the 19<sup>th</sup> century and at the beginning of the 20<sup>th</sup> century, health tourism was developed in the area through a series of bathing facilities. Also, apart from bathing, yachting became increasingly popular; 2. the postwar period was marked by the devastating effects of the second World War on the tourist industry. But, the local public administration made huge efforts in a short time to relaunch the tourist activity of the city (e.g. through the renovation of bathing facilities and of maritime heritage assets); 3. the 1960-1980s period was a phase of changes in the tourist market: travelling abroad became fashionable, due to the development of air transport. A series of measures to attract tourists arose, among which the proposition (never carried out) to transform Plymouth into a sailing centre. A decade later, Plymouth started to open a number of marinas. Also, historic events started to be valorized for tourism: in 1970, the 350 Mayflower anniversary took place, and, in 1988, the city hosted the 400 Armada celebrations; 4. the '90s-present time period includes new management strategies and priorities oriented towards a new city image (the valorization of the waterfront being regarded as a playground: footpaths, cycle ways, water sports; new logo for city branding: "Plymouth-Spirit of Discovery", which focused on the romantic, imaginative and creative features of the city replacing the references to war and the empire which had dominated before).

The last chapter of the book represents a detailed analysis of the actors involved in the tourist resources management of the historic centre of Plymouth.

The volume represents the result of a well-documented research that raises attention on a current problem of cities where tourism plays an essential role: the sustainable development of urban historic centres. In this sense, there should be respected a few directions: the original urban landscape to be included in the conservation and valorization processes;

## Book Reviews

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economic growth-led tourist activities; limited sustainable management of tourist heritage. negative effects of tourism while advantages The author has the merit of complexly are maximized; decreased seasonality through analyzing the tourist activity under the complementary and complex activities; influence of multiple factors (environmental, permanent adaptation to tourist requests, historic, economic, social) that limit or favour through new niche tourism activities. its development.

The book constitutes a valuable resource for good practices models in the field of

## GLOBAL CHANGE AND HUMAN MOBILITY

JOSEFINA DOMINGUEZ-MUJICA (Ed.), Springer,  
Singapore, 2016, 347 pp. ISBN 978-981-10-0049-2

**Reviewed by** ANDREI SCHVAB, „Ovidius” University of Constanța, Romania

Global Change and Human Mobility is a scientific publication much expected especially by the geographic community, but also by other social scientists and policy-makers. It delivers a state of the art discourse and analyses made by leading geographers from the International Union of Geographers (IGU).

Considering the recent events in North Africa, Syria and Turkey and the major impact that those have over the European Union position regarding the migrants (inter-state tensions on refugee quotas), the present book manages to emphasize the crucial importance of understanding the subtle relationships between “locations and societies” or otherwise said, the perspective that Geography can bring to better understand this process.

This book has another, very human side to it. It also tells the story of the human struggle in search for a better life. What forces storm inside a human to make him/her wonder around the world in search of a future for him/her and his/her family? The sacrifices made seem to be outweighed by the advantages found in the host place/country, as for someone to leave their friends and families in search of a better life, the pull factors need to be much stronger than the push factors. Behind all the extremely actual scientific research, Global Change and Human Mobility manages to offer us a discreet story behind the main story.

The 35 authors wrote 17 chapters, elegantly covering the wide spectrum of human mobility, ranging from theoretical aspects, changes in the paradigm, causes and effects on diverse actors: states, local communities, local businesses, different ethnic and social groups and different minorities, among many other causes and effects.

Going into detail, we observe that the first chapters offer strong arguments for the geographical perspective over human mobility. In the first chapter, Montanari and Staniscia (2016) conclude: “the speed with which the extent and the characteristics of human mobility change is only comparable with that of financial flows”. Human mobility is an essential part of a modern and globalised world, and geographers are here to grasp the underlying details in order to improve the side effects of this process. The same authors suggest broadening the concept of transnationalism adding a new transregional perspective in order to strengthen the spatial issue, and the geographical perspective, I would add, in migration studies as this will help to provide the much needed scientific data to improve policy making.

Moving on through the book, the same geography centred perspective is also found in the chapter written by Goler and Krisjane (2016). As they put it: “permanent changes of general contexts on the global level and the accelerating variability of local socioeconomic circumstances make it necessary to overcome thinking in national dimensions and territories”. The two authors emphasize the need to broaden the perspectives, because migration is global and it needs a global approach to tackle it.

In a chapter focusing on the migration patterns in the French speaking province of Quebec, Armony, (2016) describes the tension between two competing models, multiculturalism and interculturalism. He then concludes that the Canadian migration policy could be understood as an approach to “targeting specific countries, cultures or groups as desirable (and less “desirable”) sources of immigration”. At this stage, it gets hard not to observe that every country wants to attract the

best that migration has to offer. So who gets the rest? Why does this have to be a win-lose situation? But before getting there, why do possible migrants get into a situation with only one possible choice left – to leave their home country?

Further on, Sasonne (2016) analyses the role of Latin American migrants as actors and agents of territorial transformation. Using sound geographic evidence and in an eloquent manner, the author concludes: “social and territorial cohesion are related to the transnationalism relationships, which imply the new profile of the postmodern migrant that reacts to the dynamic of globalization with high flexibility and shape the landscape of the city”. This result is a much needed fact in the conceptual debate that geographers have with sociologist over the relationship between space and society. Broadly the same conclusion, based on the useful perspectives provided by geographers, is reached by Godenau and Lopez-Sala (2016) as they see “borders are useful «places» for bringing (back) space into social theory”.

Other chapters focus on the integration of migrants into the host communities. Snajdr and Drbohlav, (2016) analyse the migration of Thai people into the Czech Republic, and Irimias and Michalko write about the Hungarian experience in the UK. Another interesting chapter is written by Richard et al. (2016) as they focus on the integration of different minorities in France. They end their analysis with the idea that: “there are significant difficulties to working on the integration of immigrants”. The general conclusion that rises from these chapters is that the host countries are favourable for migration as long as migrants blend in.

Dominguez-Mujica et al. (2016) make a wonderful argumentation for the lack of hope as a push factor for migration: “The majority of the young people we surveyed, in addition to reproaching Spain’s leaders, institutions and employers for their poor management of the crisis, express a pessimistic view of Spain’s potential for change in the short term”. My personal understanding of this quote is a transfer of hope through migration. It shows

that human mobility transfers not only know-how, personal experiences among others, but also hopes. Migrants take the hope of a better life from their origin country and invest it into the host country.

The next chapters also analyse trends regarding university students. Universities seem to take advantage of the good side of human mobility. In a context in which the general demographic trend is represented by population decrease, generating fewer national students, getting in more students from foreign countries will balance out the negative demographic trend. But, unfortunately, as Fonseca et al. (2016) put it: “Immediate economic objectives seem to be the main motivation pushing universities towards the recruitment of Brazilian students”. I hope that this cannot be generalised, as the first aim of a university should be a totally different one than that of a financial institution, even if it’s part of a short term economic objective.

Clearly the main goal of a university is to create highly skilled specialists, and, in this regard, Mendoza and Ortiz (2016) state: “This positive scenario becomes gloomy and dark for the future due to the lack of opportunities in Catalan universities for fresh PhD graduates (yet it is accepted that geographical mobility is a feature of the current university job market)”. Lack of opportunities at the local scale is a globalising characteristic, few places providing most of the opportunities. Pareto law still “at large”. Should we accept without any constraints the benefits of this large scale mobility of university jobs?

This trend of “accepted geographical mobility” of the university graduates is also noticed by Glorius (2016) for the case of young Spaniards, as the author notes: “unemployment rates of the higher educated are “catching up”, as they have difficulty to find a decent position that matches their qualification”. Yet another problem of the highly qualified work-force of whose only choice seems to be the acceptance of geographic mobility.

Usually, when we talk about human mobility,

the first place of choice is a prosperous city in a rich country, but Nienaber and Roos (2016), through the case studies that they evidence, say that rural areas are already part of the “globalised migration patterns”. Migration is an important effect of globalisation, and rural areas start to have a much important role in this regard. If cities were constructed as heterogeneous/cosmopolitan places, rural areas don’t have the same coping mechanisms. It will be extremely interesting to see how these ancestral places, with a vulnerable structure, will cope with globalising changes regarding migration.

Continuing to evidence the urban-rural trend, in his chapter, Ianoş (2016) managed to show a strong correlation between the increasing domestic migration flow and the deindustrialization process. Romanians left their original homes and moved to the cities in search of a better life. As soon as that perspective of a better life ended, some of them moved back to their places of origin, many of them to the countryside. The same author continues to evidence another case of the highly qualified working force searching for better perspectives. In this regard, Ianoş concludes: the “attraction for choosing the USA and Canada by Romanian specialists in engineering and computer science, in particular, makes Romania lose the most creative of its workforce”. It’s a zero-sum game that enforces a positive feedback loop, hard to escape from, that further on creates a deeper lack of opportunities for the departing country. It is quite clear that when a country loses its creative workforce, its endogenous development opportunities are severely affected.

In the final chapter of the book, Nascimento et al. (2016) reach to a surprising conclusion, taking into account all the previous examples. They tell us a story of a community that plays with the fire, literally. The authors notice that people, from their case studies, only leave their homes when they have no other option

faced with an imminent eruption of the Pico do Fogo volcano from Cape Verde. Those inhabitants are left with no other option, as they live close to a waiting-to-happen disaster, when it comes to that moment their only option is to seek refuge in another place. It makes me question why do other people, from much more peaceful places of the world, get in a situation where their only option is to go to another place?

After lecturing the book, it is very hard not to ask myself why “in an era of increased anti-immigrant sentiment across the rich countries” (Glatzer and Carr-Lemke 2016), migration seems to be the only option left? Why do people, which are not under the threat of an exploding volcano, chose to transfer their hopes to another country? As many chapters had argued, many authors stressed out the importance of migrant integration into the local customs and way of living. Those not willing to adapt to the new settings are not that welcomed, but still their only option is to move away. Why did it become so hard to provide opportunities without the need to change places / countries / continents / cultures / mentalities / friends and so on?

Global Change and Human Mobility is a well-tuned orchestra in showing yet another time the unique perspective that only the study of space through Geography can bring forward in the social sciences. It also raises some unresting questions about the advantages and disadvantages of human mobility, about who has to gain and who has to lose. Freedom of movement is essential in the today’s world, while the innovative and competitive economies will attract the best workers, giving us a strong reason to “accept geographic mobility”. But as long as mobility is caused by the lack of opportunities and as long as mobility is built on the expense of others, we should use the learnings from this book for a win-win situation as mobility must represent a choice for the better and not a last resort.

## Aims and scopes

Analysis of the urban and regional condition needs to be interdisciplinary. In reality, urban researchers usually tend to belong to a discipline reflecting their training whether as sociologists, geographers, planners or any number of subjects concerned with the study of space and place. Our training very often endorses an appreciation of how other disciplines explore the city. For the journal the acknowledgement of the many disciplines that concerned with understanding cities and regions will be indicated by the different disciplinary back-grounds reflected in the papers published. Articles will be published by geographers, sociologists, planners, economists, political scientists, to mention just few of the disciplines involved in urban and regional study.

The Journal of Urban and Regional Analysis plans to be a key outlet publishing topical articles dealing with cities and regions. In later issues we plan to include sections devoted to notes and comments as well as a policy section outlining and discussing state and non-state initiatives aimed at improving cities and regions, together with the problems confronted by their implementation.

## Instructions to Authors

1. The Journal of Urban and Regional Analysis seeks to redefine and revigorate the links between geography, sociology, planning, economy, political science. It aims to publish original academic research, critical studies and discussions of the highest scholar standard in the field of urban and regional development. Submitted papers will be evaluated on the basis of their creativity, academic quality and contributions to advancing understanding of the complex problems related to urban and regional development.

2. Submitted manuscripts must be original, unpublished contributions. They must not be submitted or accepted by any other publications. All articles submitted to the Journal will be available online, free of charge.

3. One electronic copy of the manuscript (sent by email in PDF format) should be submitted to either of the two Editors listed below.

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