The Role of Innovation Zones in Regional Development
Newark Innovation Zone & Thessaloniki Innovation Zone case studies
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_Jönköping International Business School, May 2009_*
Abstract

Problem: Innovation and regional development are two topics that were (separately) very much discussed by scholars, and in recent literature there have been attempts to combine and show how the former can contribute to the latter. At the same time, different types of regional agglomeration systems have been developed and discussed such as: clusters, hubs, innovation systems, technopolies, and knowledge cities. However, there is a significant gap in literature when it comes to innovation zones. As a result, there is a need to look into the role of innovation zones in regional development and examine the possible benefits (if any) that the innovation zones can provide to the region to which they are affiliated.

Purpose: The purpose of this thesis is to analyze the role of innovation zones in regional development and define the possible benefits that they offer to the regions to which they are affiliated.

Method: In this thesis we have employed the case study method, and we followed a qualitative method approach. To this purpose, we conducted interviews with authors that are specialized on this topic in order to obtain valuable information, and clarify the concept of Innovation Zones. We also interviewed people who could provide us with primary information on innovation zones. Most of the information on the zones derives from official documents, interviews and online sources.

Results: The analyses of the two innovation zones we used as case studies showed as that the actors in the innovation zones are universities, businesses, research institutes and governmental organizations. The location of the innovation zones are characterized by strategic position with high level of infrastructure and play a very important role in the efficiency and effectiveness of zones. The innovation zones can create job opportunities and new businesses by attracting local and foreign investments. Innovation zones’ main objective is to foster business creation and innovations and make innovative use of knowledge, resources and legislations and can foster business creation and innovations.
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1. **Introduction**

The subject of this thesis is about the role of Innovation Zones in regional development that will be used in its abbreviated form IZs throughout the thesis. In this introductory chapter, we will present the background of the topic and reasons that brought us to investigate this matter, which is then followed by the purpose and the research questions. The thesis’ outline will be presented at the end of this chapter.

1.1. **Background**

“In advanced nations, future prosperity will increasingly hinge on innovation – successfully developing and commercializing new technologies, new products and new processes” (Porter, 1999 in Simmie, 2003, p.610). Innovation “is an ubiquitous phenomenon in the modern economy. In practically all parts of the economy, and at all times, we expect to find on-going processes of learning, searching and exploring, which results in new products, new techniques, new forms of organization and new markets” (Lundvall, 2000 in Feinson, 2003, p.17) and it “involve[s] continuous interactivity between suppliers, clients, universities, productivity centers, standard setting bodies, banks and other critical social and economic actors” (Mytelka 2001, p.3 in Feinson 2003, p.17). Innovation and regional development are two subjects that (separately) are very much discussed by the scientific world. At present, many authors tent to connect innovation to regional development, and examine its role in developing specific regions. The importance of the innovation systems in regional development lies in the fact that the governments, at least in the advanced nations, are supporting regional innovation as a way to boost national competitiveness (Cook, 2003). There has been a tendency among countries to prepare a plan at national and regional level for development to allocate the national economy at regional stage (Higgins & Savoie, 1988). Cook refers to two successful cases of regional innovation activities: first, in Germany in 1995, regional bodies built regional, innovative biotechnology clusters to boost Germany’s position. Munich in Bavaria, Cologne in North Rhine-Westphalia and Heidelberg in Baden-Württemberg were the winners in BioRegio contest (Cook, 2003). Second, in the United Kingdom, since 1998, the government built a knowledge driven economy by improving the regional bodies and “co-funding growth of innovation through supporting regional cluster-building strategies” (Cook, 2003, p.1).

Regional development deals with the analysis of a particular region in order to formulate a planned structure of development approach for that area. Regional development has been the focus of study for a large number of studies. Regions have been paid great attention from scientists from different disciplines such as economics, geography, political science, geology and sociology and they are looked at as independent market places (Karlsson & Johansson, 2008). Here it is important to refer to the definition of the development, which according to Fik (2000) is “the making progress towards desirable goals and outcomes, the most important of which is improving the human condition”. He elaborates this further to define the economic development as “the positive changes and progress in the human condition through economic means” (Fik, 2000, p.22). We can therefore say that the regional development is a progress of human...
conditions through economic means in a specific region. Regional development is one of the issues in which many countries are engaged, with the aim of improving their economical situation.

Common knowledge groups or clusters\(^1\) are formed by an organized and geographical mixture of firms having similarity in highly harmonizing capabilities for common research and development (Maskell & Lorenzen, 2003). Since 1980, the concept of clusters and network has been a central idea for the increase of competitiveness and economic growth. The creation and formation of the clusters brought a new way in doing business in traditional local and regional level. There are many reasons for developing and promoting the innovation in a regional level; some of them are the promotion and development of the products and the services that are produced for in the innovation zones. Others reasons concern the development of the dynamics of the geographic region where the innovation zones will be located. Some examples of relevant activities are financial services zones in New York, and London, the Media zone in Hollywood, the Computer technologies in Silicon Valley, the telecommunication zone in Stockholm and Finland, and the textile zone in Italy (Ministry of Development, 2005).

The concept of IZ came from the development of clusters. The difference between the two is that clusters are strongly connected to private incentives, whilst on the other side the creation of the IZs derives from governmental initiatives (Ministry of Development, 2005). In New Jersey there are three IZs: In Brunswick, Camden and Newark. Newark IZ in New Jersey (USA) which is a governmental initiative; it has been operating for ten years, and it includes one of the biggest incubators (Jacobs, 2007; New Jersey Business Incubator Network).

Since 2001, many policies have been developed aiming at increasing innovation and competitiveness in Greece. In 2004, a National Council for competitiveness was established, and new laws (Development law) were adopted in order to promote investments and mergers. Additionally, the concept of technology parks was adopted, and a network was set up across the entire country (OECD, 2005). Recently in Thessaloniki, the second biggest city in Greece, efforts to create an IZ have been made, to successfully be completed by July 2009. Thessaloniki Innovation Zone (TIZ) is located in the eastern part of the city (Thessaloniki), and is an agglomeration of areas in the prefecture of the city and its aim is to attract Greek and foreign innovative businesses through synergies among business and academic vehicles and implementation of innovative technologies and researches in essential sectors for the regional and world economy (Innovation Zone of Thessaloniki).

Engaging firms and other actors in playing role for the regional development is a complicated task. This requires a constructive environment for research and development, and a drive for innovation and learning. Innovation Zones focus on these collaborated environments of innovation, and the major models for creating a supportive technology based advancements, innovation, learning, and knowledge-based regional development.

\(^1\)“Clusters are geographic concentrations of interconnected companies, specialized suppliers and service providers, firms in related industries, and associated institutions (e.g. universities, standard agencies, and trade associations) in particular fields that compete but also cooperate” (Porter, 2000 in Carpineti, Galdamez & Gerolamo, 2008, p.406).
1.2. Purpose and Research Questions

Purpose

The purpose of this thesis is to analyze the role of innovation zones in regional development and define the possible benefits that they offer to the regions to which they are affiliated.

Research Questions

In order to accomplish the purpose of the thesis we believe it is important to answer the following questions.

- Who are the main actors of the innovation zone?

This question is mainly descriptive and it enables the identification of the main involved parties and their activities in the innovation zone. Therefore, it will be easier for the reader to understand the nature of the actors of the innovation zone and the role that they play in the development of the zone.

- What is the role of innovation zone in regional development?

The main purpose of the thesis is the analysis of the role of innovation zones in regional development. Thus, it is very important to identify the outcomes that the innovation zones can bring to the region in which they belong.

- Are the efficiency and the effectiveness of the innovation zone conditioned by location?

The innovation zones are characterized by topicality and have specific geographic boarders. Consequently, it is important to examine if the efficiency and the effectiveness of the IZ are conditioned by the location in which they are established.

- What can Thessaloniki innovation Zone learn from Newark Innovation Zone?

Thessaloniki is a newborn innovation zone that will start operate in June 2009. Thus, after analyzing the role of Newark Innovation zone we will be able to identify its main characteristics that Thessaloniki innovation zone might be able to adapt from Newark Innovation Zone case.
1.3. Thesis outline

Chapter 2 – Research Design and Method:

In this chapter we will present the different views of scientific perspective, research approach, and the applied method employed in the course of this research. Further we will argue our choice of method and present the limitations and the challenges we faced in gathering the empirical material.

Chapter 3 - Frame of Reference:

In this part of the thesis we will present the literature and theories that will assist us provide a scientific foundation to our study. The theories that are presented are deriving from authors that have previously analyzed the matter and have discussed the issues we are investigating. Later in our thesis we will use this frame of reference in the analysis part of our empirical findings.

Chapter 4 - Empirical Findings and Analysis:

In this chapter we will present the empirical data we collected for our case studies. It consists of an overview of the Newark (New Jersey, USA) and Thessaloniki (Greece) IZs and an analysis of both in combination with the theory and concepts presented in the previous chapter. Due to the nature of the data we decided to collocate the empirical presentation and analysis in the same chapter, so it will prove easier for the reader to understand the results of our research.

Chapter 5 – Conclusion:

In this chapter will provide the reader with an overview of the main findings. We answer our research questions that derive from the purpose of this thesis and the answers are result of the empirical findings and analysis that has been made in the previews chapter.

Chapter 6 – Discussion and Further Research:

In this chapter we will present the contribution of our thesis and of the topic we have analyzed and we will reflect on the reviewed literature and address what we consider gaps in research that could potentially develop into interesting and enlightening opportunities for further study.
2. **Research Design and Method**

This chapter presents the different views of scientific perspective, research and method approach, and the applied method for this paper and it is followed by our choice of method. We will argue for our choices and we will compare the different approaches available.

### 2.1. Theory of Science

In order to decide on what method we are going to use for our thesis, it is important to view the different perspectives of the theory of science that we can apply. According to the literature, there are two perspectives that a researcher can follow: the positivistic and the hermeneutic perspective.

In positivistic perspective, there is a need for the observer to be independent from the subject he observes, and the need to create a hypothesis for future confirmation. The positivistic approach searches for laws and explanations and in order to facilitate the analysis, it reduces the whole in simple elements (Easterby-Smith, 1991; Remenyi et al., 1998 in Amaratunga, Baldry, Sarshar & Newton, 2002). Positivism is highly connected to quantitative methods, and it deals with testing of hypothetical deductive generalizations. The quantitative method involves measuring and counting (Gillham, 2000). It is characterized by empiricism, where the theories are justified by the degree to which they can be confirmed, and also justified by an application to the facts that are required (Amaratunga, Baldry, Sarshar & Newton, 2002). This approach uses statistical methods and it is based on numerical measurements of indicators of particular phenomena (King, Keohane & Verba, 1994 in Murray, 2003).

The hermeneutic perspective is defined as the art of interpretation (Eryaman, 2006). With hermeneutics approach we can use individual actions and behaviors that can be interpreted (Lee 1994 in Webb & Pollard 2006). Hermeneutics is a type of interpretivism (Lee, 1994 in Webb & Pollard, 2006). Interpretivism, in contrast to positivism, uses qualitative approaches and aims at understanding a phenomenon (Easterby-Smith 1991, Remenyi et al. 1998 in Amaratunga, Baldry, Sarshar & Newton 2002). On the other side, the qualitative method involves descriptions and it focuses on the evidence that will give the meaning of what is going on (Gillham, 2000). In the qualitative method we describe the characteristics of people and events without comparing them in terms of amounts (Murray, 2003). The researchers study the issues in the natural form and they try to explain the phenomena through the meanings that the people bring to them (Murray, 2003). In a qualitative method we can use case study, observational text, historical text, interviews in order to describe the problem (Denzin & Lincoln, 1994 in Murray, 2003).

In Table 2.1, we present the two different perspectives and the methods, from where we then determine which one we shall use.
In positivism, the method used predominantly, is the qualitative method. In positivism we have hypothesis testing, whilst in hermeneutics perspective we use qualitative methods and we have hypothesis generation.

Our approach is descriptive and it does not make use of any quantitative method. We are going to present and describe our case studies and interpret the findings in relation to our theory. Therefore, having in mind the two different perspectives we believe the hermeneutic approach to be more suitable for our thesis.

2.2. Research Approach

It is essential to clarify the research approach we are going to adopt throughout the course of this research.

According to Kikerby and Hyde there are three general approaches that may end in new knowledge acquisition: the inductive, the deductive and the abductive approach (Kikerby 1900; Hyde 2000 in Spens & Kovacs, 2005). The deductive approach of research is a process of testing which starts with a conventional theory or generalization and focuses on examining if this theory applies to particular instances (Hyde, 2000 in Spens & Kovacs, 2005). The inductive research approach is a process of development, which starts with observations of particular instances and focuses on establishing generalizations about the subject that is being investigated (Spens & Kovacs, 2005). Finally the abductive research approach is a process of “reasoning from effect to causes or explanation” (Lamma et al., 1999 in Spens & Kovacs, 2005, p.374).

“The deductive research scans theory, derives logical conclusions from this theory and presents them in the form of hypothesis (H) and propositions (P), tests these in an empirical setting and then presents its general conclusions based on the corroboration or falsification of its H/P” (Spens & Kovacs, 2005, p.137). The inductive approach has a mirror image of the deductive approach (Johnson, 1996 in Spens & Kovacs, 2005). The former follows the rule-case-result process (Spens & Kovacs, 2005). In the inductive approach real-life observations from the world lead to “emerging positions and their generalization in a theoretical frame” (Spens & Kovacs, 2005, p.137). The latter follows the case-result-rule process (Danemark, 2001; Kirkeby 1990 in Spens & Kovacs, 2005).

The following graphical representation can clearly show the different paths that the two research approaches follow.
Finally, in the abductive research process the researcher applies a new theoretical framework to a phenomenon that already exists (Kikerby, 1990 in Spens & Kovacs, 2005). Abductive approach follows the pattern of rule-case-result (Danermark, 2001; Kirkeby, 1990; Peirce, 1932 in Spens & Kovacs, 2005). Abductive approach “emphasizes the search for suitable theories to an empirical observation [...], data is collected simultaneously to theory building which implies a learning loop, or at least a back and forth direction between theory and empirical study” (Spens & Kovacs, 2005, p.138).
After presenting the three research approaches we will explain which approach will be used for the purpose of this thesis. Our approach of this topic is more interpretive and for that reason we believe the inductive approach to be the most suitable for our research since we are not going to produce any numerical data. We shall start from existing theoretical knowledge (theories, concepts from the literature), and through analysis of the empirical findings we are going to examine the role of innovation zones in regional developments.

2.3.  Applied Method

In this thesis we are going to use a case study method. Before we explain the reason we chose this kind of approach it is important to introduce the reader to the case study method in order to understand how this research approach works.

A case study can give the ability to the researcher to answer ‘how’ and ‘why’ problems and at the same time understand the complexity of the procedure that is taking place and also to explore areas that research studies are inadequate (Cepeda & Martin, 2005).

According to Yin, “a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context especially when the boundaries between object of study and context are not clearly evident. It copes with the technically distinctive situation in which there will be many more variables of interest that data points and as one result relies on multiple sources of evidence with data needing to converge in a triangulating fashion and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis” (Yin, 2003 in Dul & Hak, 2008, p.4).

In this paper we are going to use two case studies. Newark Innovation Zone (New Jersey) and Thessaloniki Innovation Zone (Greece) case studies. Newark IZ is a zone that operates for ten years now. One the other side, Thessaloniki IZ is a new born IZ and it will officially start operate
in June 2009. For that reason we will use the first case study as an extended one in order to combine it and interpret its data with the theory. The second case study will be used as a secondary study in order to compare the two IZs and come up with conclusions and suggestions on what are the common characteristics between the two IZs. Further, we will attempt to give any possible recommendation that will derive from the first case to the other.

2.4. Realization of Study

2.4.1. Gathering the empirical material and limitations

Innovation Zone is a subject that is not so much discussed by scholars. As a result we encountered significant difficulties in obtaining information related to this matter. Also, it proved challenging to find information and statistical data for the innovation zones case studies that we used. Therefore, in this thesis we decided to use documents and interviews.

2.4.1.1. Gathering the empirical material

The documents that we used are from official sources related to our case studies such as governmental articles, reports, and essays, presentations from conferences of the CEO of Thessaloniki IZ official and websites from the innovation zones, newspapers and governmental organizations.

The people we interviewed during the course of our research are:

At the beginning of this research we visited the Science Park of Jönköping and interviewed the business incubator manager, Magnus Gramming, in order to learn how the science park operates, and what its contribution to regional development is. The insight from the Jonkoping science park and the simultaneous research on regional innovation systems lead us to finalize the topic of this thesis which is Innovation Zones. The reason for that was the fact that science parks are a small part of the innovation zone, and we decided our focus to be in the broader area of IZ that includes many different actors and analyze its contribution to regional development.

Also we interviewed the Vice President of City Liberal Studies College in Greece (this university is cooperating with Thessaloniki Innovation Zone), Dr Panayotis Ketikidis, who has been highly involved with issues related to the Thessaloniki IZ (TIZ), and provided us with official articles and reports in order to gain a good understanding of the innovation zone of Thessaloniki and its actors. We interviewed the Greek professor from Aristotle University in Greece, Nikos Komninos, who has written articles for the innovation zones and systems and he is specialized in Urban Development and Regional Innovation. He also provided us with information on innovation zones, innovation systems, clusters and technology parks. Moreover, we interviewed the coordinator of the Association of Information and Technology Companies in Northern Greece, Andreas Baresel-Bofinger, who directed us to sources highly related to the innovation zone of Thessaloniki. Additionally, we attempted to contact the CEO of TIZ and the Newark Innovation Zone officer Mr Steven Royster in order to gather primary knowledge on the zones. Unfortunately, the last two interviews failed to succeed since we could not get hold of the fore
The questions asked to the interviewees are included in the last chapter of the thesis (appendix: Interviews). The questions aim at defining the concept of Innovation Zones and obtain information on the role of IZs in the development of the regions they belong. Also, through these questions we attempted to clarify the difference between similar agglomeration concepts such as clusters, innovation systems and innovation zones in order to orientate our research towards the correct sources. Questions on the innovation zones were formed in order to gather valuable information that is not available on the World Wide Web of books. The interview that took place in Jonkoping Science park aimed at gaining an understanding on how an incubator operates and what benefits can provided to the involved parties. Through these interviews the interviewees provided us access to official governmental documents and made to us available a number of important articles and journals. Two governmental reports from Greece we used to define the IZs and the objectives of Thessaloniki Innovation Zone. Also, two presentations from the CEO of Thessaloniki IZ (TIZ) were used to gather information about TIZ. Also, the interviewees suggested a number of articles and journals that helped us define the focus of our thesis. Also, we accessed the relevant literature (journals, articles, books) and we accesses official websites of the innovation zones and governmental websites in order to gather information about our case studies.

2.4.1.2. Limitations

As it was mentioned before, during our research we met difficulties in finding information that connect directly the innovation zones to regional development of the regions that are affiliated. It proved hard to obtain numerical data that can show the direct contribution of the innovation zones to the development of the region (such as employment rate of the IZ, number of business creation especially in comparison to previous years, or any statistical information specifically on innovation zones). Also, due to the nature of the questions (from the interviews), and particularly the answers, we shall not use direct quotations by the interviewees. Instead we shall make use of the suggestions, leads and resources made available to us through talking to them. Consequently, the resources used in the course of this study, as well as the structure and certain views have been significantly shaped by the outcomes of these interviews.

2.4.2. Trustworthiness of the thesis and reflections on the method chosen

We believe that the use of qualitative approach and the case studies are well-suited for our thesis in order to fulfill the purpose of our research. With this approach we gathered information throughout the research, and we interpreted the data by using official documents and interviews. The use of official documents and the direct interviews ensure the reliability if the information and helped us come up with consistent conclusions. Our research is more interpretive and therefore we are not able to produce data that will show the direct connection of the innovation zones to regional development. We attempt to reveal any indirect connections and analyze any available data in order to fulfill our purpose.
The use of the two case studies helped us compare the two IZs and see how an experienced IZ like Newark’s city IZ operates, and at the same time what the potential of new born IZ (Thessaloniki IZ) are. For Thessaloniki IZ we managed to also gather information from interviewees that provided us with official documents and knowledge on this matter. Because of the nature of the research and the limitations that we faced, a re-search might not produce the same results. In the theory of science we found that interpretive approach would be more suitable for our thesis because we cannot measure the contribution of the innovation zones and produce numerical data or statistical information. However, the trustworthiness of the thesis is based on the official documents and websites and interviews with people related to the innovation zones and/ or regional development issues.
3. **Frame of Reference**

In this part of the thesis we will present literature and theories that are going to constitute the scientific foundations of our research study. The theories that are presented derive from authors that have previously analyzed the matter and have discussed the issues we are investigating. Further in our thesis we will use this frame of reference in the analysis part of our empirical findings.

3.1. **Regional Development Theories**

According to the *theory of Cumulative Causation*, as explained by Higgins and Savoie, the countries where regional gaps were large, they were increasing further; where regional gaps were small they were diminishing (Higgins & Savoie, 1997). Further, Myrdal noted that the more advanced countries are more likely to introduce an effective welfare state, introducing the measures to reduce regional inequalities, and thus keeping the upward cumulative movement going. He justifies his argument by saying “The more effectively a national state becomes a welfare state the stronger will be both the urge and the capacity to counteract the blind market forces which tend to result in regional inequalities; and this, again, will spur economic development in the country, and so on and so on, in circular causation” (Myrdal, 1962 in Higgins & Savoie, 1997, p.87).

The *Location theory* addresses the questions regarding types and location of economic activities. By this the location of economic activities can be determined on the regional level or narrowly on some kind of specific zones. Several writers have explained this theory through utilization of theories of prices, production, employment and distribution (Higgins & Savoie, 1997). Hoover (1948) explained the personal preferences of managers, scientists and engineers as vital in this theory as he explains in his book, “Everyone has some preference as to consumer location, i.e., where he would like to live and spend his income. For all but an envied minority there is also the question of producer location, i.e., the best place to earn an income... Most people come to prefer the kind of environment in which they have been living rather than some other social, racial or institutional atmosphere; unfamiliar climate and landscape, or change from urban to rural living or vice versa” (Hoover, 1948, p. 4 - 5). Mobility in regional economics is important, as noted in Higgins and Savoie book, since many enterprises like to work where they were born and stay by summing “personal factors such as proximity to home and family location preferences features prominently in the result of location surveys” (Higgins & Savoie, 1997, p.120). These factors of governing mobility are of prime importance in the theory at hand from the perspective of regional development.

Finally, it is important to refer to the New Growth theory that is also known as the endogenous growth theory. According to *endogenous growth theory* the economic development comes from inside of a system. “The endogenous growth models and analyses stress that agglomeration and localization phenomena generate positive external effects that outweigh the negative effects, especially if these phenomena are accompanied by appropriate regional infrastructure.
investments” (Karlsson, Johansoon & Stough, 2000, p.4). This theory points out the importance of investing in new knowledge creation in order to sustain the growth (Cortright, 2001). The main point of this theory is that knowledge brings growth. Later on in this chapter we will discuss further the importance of knowledge and knowledge creation.

3.2. Infrastructure & Knowledge Based Infrastructure

It is usually a difficult task to understand how radical technologies in particular, emerge or sustained unless to understand the role of supporting infrastructure (Smith & West, 2007). There are two roles of infrastructure in shaping large-scale technologies; on one side, such technologies often involve significant accompanying infrastructure with the, like automobile or consumer electrical technologies. While on the other hand, turning to knowledge infrastructure can help development in the public sector infrastructural organization building (Geenhuizen et al, 2005).

Smith provisionally defines infrastructure as “The economic infrastructure consists of large-scale indivisible capital goods producing products or services, which enter on a multiuser basis as inputs into most or all economic activities” (Smith, 1997 in Remoe, 1999, p.71). The provision of infrastructure can be vital precondition for the diffusion of major technologies (Edquist, 1997). For example the fax machine requires a telephone system, and the diffusion of advanced information technology requires internationally compatible telecommunications (Edquist, 1997).

George Tassey has defined the institutional base and knowledge intersection in his ‘technology infrastructure’ in the following way: “The technology infrastructure consists of science, engineering and technological knowledge available to private industry. Such knowledge can be embodied in human, institutional or facility forms. More specifically, technology infrastructure includes generic technologies, infra-technologies, technical information and research, and test facilities as well as less technically-explicit areas including information relevant for strategic planning and market development, forums for joint industry government planning and collaboration, and assignment of intellectual property rights” (Tassey, 1991 in Edquist, 1997, p.95). Considering infrastructure as generic, multiuser and indivisible enabling activity can lead us to understand the existence of ‘knowledge’ infrastructure (Edquist, 1997). The infrastructure has great significance for the economics of a country, as the industrial production is dependent on the knowledge transfer and utilization. Such knowledge can either be formal or tacit (Edquist, 1997. In the next section we are going to talk about the importance of knowledge (either is tacit or explicit), innovation and regional development.

3.3. Knowledge, Innovation and Regional Development

3.3.1. Clustering knowledge for development

As Whittington said, superior knowledge is the most priceless resource of all (Whittington, 2001 in Rademakers, 2005). In this paper, in order to capture the meaning of regional development an how the literature has discussed the regional growth through time, it is essential to refer to the
The Role of Innovation Zones in Regional Development – Frame of References

importance of knowledge and how knowledge can affect regional development. Especially for regional development, learning and knowledge are essential forces for economic growth (Lundvall/ Johnson, 1994; Gertler/ Worfe, 2002 in Koschatzky, 2004). Starting with the definition of knowledge “Knowledge can be defined as a dynamic framework or structure from which information can be stored, processed and understood [...] and it is associated with a process that involves cognitive structures which can assimilate information and put it into a wider context, allowing actions to be undertaken from it” (Howells, 2001, p.872).

Nonaka & Takeuchi, make a distinction between tacit and explicit knowledge. They say that “Tacit knowledge is basically experience gained through action and explicit knowledge refers to knowledge stored and made available in books, databanks or other media" (Nonaka & Takeuchi, 1995 in Evers 2008, p.6). Most of the literature describes tacit knowledge as a kind of knowledge that it is difficult to copy or transfer or imitate because it is embedded in humans as experience. If we take into consideration that eighty percent of knowledge is tacit (Botkin & Seeley, 2001 in Munnich, Schrock & Cook, 2002), we can then see the importance of accumulating activity, and foster knowledge flow (Munnich, Schrock & Cook, 2002) between people and organizations. According to Munnich, Schrock and Cook, (2002) knowledge is clustering geographically not only because it is complex, but also because it is embedded in individuals and it is difficult to be transferred across space, be it tacit or explicit. The development of technology has unquestionably enabled the transfer of knowledge between obscure parties. However, it is not always easy to access it, and so the close contact through specific linkages of organizations and consequently of people is still essential. The importance of close contact of the people lies in the difficulty in knowledge accessibility (explicit or tacit knowledge). When the knowledge is explicit there are times that it might be ambiguous or misunderstood by involved parties that are not directly involved when this knowledge is articulated (Fallah & Ibrahim, 2004). Thus, the real meaning is missing and the level of incorrect import of knowledge is high. In the case of tacit knowledge the difficulty rises behind the assessment of the whole picture or the content that gives meaning to the information (Castillo, 2002 in Fallah & Ibrahim, 2004). Tacit knowledge is a type of knowledge that can be easier misunderstood not only because of its implicit nature, but also because tacit knowledge cannot directly be expressed through organizations’ activities. Thus, it is necessary for this knowledge to be obtained through actual interaction with the environment in a specific time and place (Fallah & Ibrahim, 2004), and have the people collaborate with one each other.

Knowledge is highly connected with the firm’s performance, and consequently with regional development. Knowledge infrastructure, knowledge generation and protection, knowledge agglomeration and appropriation and innovative use of knowledge are the fundamental drivers for regional development (Karlsson & Johansson, 2008). According to Thornhill (2006) firm knowledge, industry power and innovation can influence the performance of a firm. Another reason that knowledge is important for regional development is that knowledge is a unique asset for economic development. It can deliver growing profits to scale and it can be used again with almost no marginal cost (Cortright, 2001). Cortright (2001) also mentioned that in order to achieve continuous growth, it is important to reach increasing knowledge, rather than increase of capital or labor. Although the new information technology has enabled world-wide transfer of explicit knowledge, the mobility of tacit knowledge – which is important source of regional
development - is not easy and the present of face-to-face interaction is essential (Maskell & Malmberg, 1999).

### 3.3.2. Innovation and Knowledge creation for Regional Development

It is very important to our analysis, that we give the definition of innovation in order to finally explain the nature and the purpose of the innovation zones. According to Drucker (2007) innovation is the act that endows resources with a new capacity to create wealth. Innovation lead to competitive advantage, therefore, consequently bringing greater profitability (Roberts, 1999; Roberts & Amit, 2003 in Thornhill, 2006). In a knowledge-based economy, the level of innovation is usually high, and the achievements in these economies are characterized by a high level of development, and regional growth. Knowledge is the key source of innovation and at the same time is an essential driver for economic development (Simmie, 2003). As a firm becomes more innovative and reaches a superior level of growth, consequently the region, to which this firm is affiliated, can benefit from this development. In addition, firms that are characterized by innovation and that belong to an environment of agglomeration of innovation are capable of working across knowledge transfers glocally (Simmie, 2003).

To achieve regional economic growth and regional development, companies need to interact in order to not only create knowledge, but also to further develop it. Margaret Fuller, a very prominent journalist, said that: “If you have knowledge, let others light their candles in it”. Sharing the knowledge that one company has with other firms, can lead to innovation and provide competitive advantage for both parties. However, knowledge in the business environment does not always come from intra-firm interaction. Universities, research institutions, trade associations, and government research engines, are examples of sources of valuable consistent knowledge to which not all firms have access. Clustering activities and agglomerations of knowledge intensive institutions and create a high level knowledge-based environment where knowledge infrastructure, knowledge generation and protection, knowledge agglomeration and appropriation and innovative use of knowledge will deliver the fundamental drivers for regional development (Karlsson & Johansson, 2008). According to Porter, “Clusters are geographic concentrations of interconnected companies, specialized suppliers and service providers, firms in related industries, and associated institutions (e.g. universities, standard agencies, and trade associations) in particular fields that compete but also cooperate” (Porter, 2000 in Carpineti, Galdamez & Gerolamo, 2008, p.406). A cluster can be a way to build relationships between companies, universities and governmental institutions in order to foster the cooperation between them, and increase the communication and knowledge creation. The Information Design Associates and the ICF Kaiser International (1997) mentioned that clustering can become a priceless tool to deliver successful economic change. In this economic change, universities and other research institutions can positively influence the growth in a region (Andersson, Anderstig & Hårsman, 1990). The positive effect of interaction between universities, research institutes and companies can be highlighted here. Interaction and networking with universities and research institutes creates positive effect on the innovation of a region and can bring benefits to both the region and the industries (Rond’e & Hussler, 2005). In order to be clearer on the role of knowledge intensive institutions we are going to present a model of the connection between the universities’ outputs and the regional development.
According to Goldstein the output of higher education institutions can lead to economic growth (Goldstein & Renault, 2004). The outputs are knowledge creation, human capital creation, transfer of existing know-how, technological innovation, capital investment, provision of regional leadership, co-production of the knowledge infrastructure and co-production of a particular type of regional milieu. The possible effects of these outputs contain: productivity gains, business innovation, new business start-ups, an increase in regional economic development capacity (for sustained, long-term development), regional creativity, and direct and indirect spending impacts (Goldstein & Renault, 2004). Thus, universities can be a significant driver for regional growth and development of industries. Universities and research institutes become more institutional in the regions while they take part in local official activities (Lawton Smith, 2003). Lawson and Lorenz, present the case of Minneapolis’s local concentration of expertise in medical devices. They present its successful rich history by describing that “co-operative product development between local engineering firms for the most part started up and staffed by graduates from the University of Minnesota, and medical researchers working in such well known delivery organizations as the University of Organizations as the University of Twin Cities Hospital” (Lawson & Lorenz, 1998, p. 313).

In the case of interaction between firms and knowledge intensive organizations, we can characterize this phenomenon as a snowball effect. When a firm cooperates with universities or research institutions in order to acquire specific knowledge for problems solutions, at the same time the universities improve their knowledge by being exposed to real life cases and upgrade their knowledge content and vice-versa. Therefore, the idea generation comes from both parties through means of close communication and interaction. The previous mentioned factors can lead to knowledge spillovers. “Spillovers are the unintentional transmission of knowledge to others beyond the intended boundary” (Fallah & Ibrahim, 2004, p.8). “The new knowledge that is
generated within a certain firm in a given sector and region will over time spill-over to other firms, to other sectors and to other regions” (Karlsson, Johansson & Stough, 2000, p.4) Thus the knowledge transfer, between the accumulated players in a certain region is intense and the potential knowledge spillover creation is therefore high.

3.4. Innovation Zones

When firms; highly skilled labor; and knowledge institutions (typically universities and research facilities) cluster together (Lorenzen & Mahnke, 2000) can generate valuable assets to the involved enterprises and their customers. Also, they can produce strong networks inside this system, and lead the region in which they operate to high a level of growth. The regions that are characterized by company Research & Development and universities are centers that produce research results, can generate knowledge that is more versatile, and create opportunities for personal contacts (Karlsson & Johansson, 2008). Additionally, if a neighbor industry has a strong ability to interact with public institutions, they can increase the level of innovation of other neighbor industries in the same region (Rond’e & Hussler, 2005). This shows that interaction between universities, companies and research institutes can have a positive effect on a region, and the industries in this region can benefit from this. In that way, the regions can produce regional innovation systems in order to accumulate innovation activities and networking and exchange tacit knowledge (Koschatzky, 2004).

Important vehicles for driving regional development are: science parks, incubators, sectors specific innovation cities/cluster, innovation zones, regional networks (Arzimanoglou, 2008). In our analysis we are going to focus on innovation zones where science parks, incubators and institutes are included. Unfortunately, research on European and International level showed that there is no official and specific definition for the innovation zones. The definition of IZ varies according to the initiatives that are created in national and regional level. The definitions on IZ that are found are known as Keystone Innovation Zones (USA compilation) or Knowledge innovation Zones (international compilation) (Ministry of Development, 2005).

An innovation zone is a geographical area that is located close to universities and hospitals and the enterprises that belong to the IZ will be given support, financial benefits and specialized supportive consulting services (Ministry of Development, 2005). “It is a geographic defined area, with specific geographic borders leading to the formation of an island of land with entry and exit points. This land can also become unique and privileged are through the institution of a special legislative framework applicable only to the Zone area” (Arzimanoglou, 2009). The purpose of IZ is the fast transfer of the knowledge and ideas from the laboratories to the market, in order to introduce new opportunities for economic development and creation of new employment opportunities (Ministry of Development, 2005).
The stages that are followed in order to form an IZ and implement such ventures are the following:

- Discussions and analysis of the competitive issues of this venture before the start of the project.
- Initiation of the venture by specializing the section of the different activities; the promotion of the venture through exhibitions and presentation of it to the interested parties.
- The implementation of this idea in order to attract more prospective interested parties
- The venture gets a more official and stable form

(Ministry of Development, 2005).

There some critical factors for success or failure of an IZ and we can enlist them as follows:

- Existence of one or more well defined economic activities
- Existence of infrastructure of knowledge creation and provision of technological services (Universities, research institutes, laboratories, etc)
- The research activity is oriented towards the technological development and diffusion
- Existence of entrepreneurship that is oriented towards specific sectors of interest of innovation
- Strong linkages and networks (common research, exchange of personnel, common patents, relationships between customer-supplier) among the different enterprises and between them, universities and institutes
- Existence of Media infrastructure
- Existence of entrepreneurial, innovative and collaborative culture in the enterprises, universities and institutes
- Existence of investment capital and innovative funding methods
- Commitment of the government and existence of a common vision and plan of the development of the venture

(Ministry of Development, 2005)
4. **Empirical Findings and Analysis**

In this chapter we will present the empirical data we collected for our case studies. It includes the overview of Newark (New Jersey, USA) and Thessaloniki (Greece) IZs and analysis of them in combination with the theory and concepts presented in the previous chapter. Based on the reviewed literature there is no direct association of innovation zones and economic development on a regional or national level. However, as states by the purpose of this thesis we attempt to identify any such connections whether they are direct or indirect. This is done through the application of the fore mentioned theories and extensive review of empirical data.

4.1. **New Jersey**

Newark IZ is located in Newark, the largest city in New Jersey. New Jersey is aptly named "The Invention State" for its large number of engineers, scientists, and inventions (Bastian, 2007). Its previous year performance made a suitable reason to why it is home to a multitude of world-renowned companies. Companies in every business field from biosciences, telecommunications, advanced materials, microelectronics, and computer applications are working there (Bastian, 2007). Not surprisingly, between 2001 and 2006, New Jersey grew its science and technology work force by 10.4 percent - a rate twice the national average (Bastian, 2007). In New Jersey there are three IZs: In Brunswick, Camden and Newark. In the following map we can see the location of the three counties where the IZ are located.

![New Jersey region (Three IZs)](http://www.sevenmile.com/category/webtech)

*Figure 4.1 New Jersey region (Three IZs)*

Source: Seven Mile, [http://www.sevenmile.com/category/webtech](http://www.sevenmile.com/category/webtech)
These IZs offer a variety of benefits for the people and the businesses that belong to the zones. The companies that are located in these zones can enjoy benefits such as opportunities that are highly related with partnerships and are coordinated by the state. Some examples are:

- The provision of a funded incubator for small firms and start-ups that can enjoy a big number of services in a technology and business related environment.
- The zones enable the relationships between the universities and the high-tech businesses and the industry researchers have the opportunity to access university labs and the students can be placed in industrial labs.
- Provision of technical assistance to the start-up, and the collaborative research facilities provide strategic cooperation.
- In the Innovation Zones in Greater New Brunswick, Camden, and Newark, under NJ Economic Development Authority, the companies enjoy access to world-class commercialization facilities for their business and an enhanced financial incentive by the authority (State of New Jersey, Commission on Science & Technology).

The Economics Development Authority of New Jersey established these three IZ in order to attract companies that are going to be located very close to the universities and research institutes (Ministry of Development, 2005).

4.1.1. Newark

In the course of our analysis we will focus on Newark Innovation zone for two reasons. First, on an empirical level, the process in obtaining the information proved easier considering that it is has been operating for relatively long period of time. Second, Newark is the third largest city in the state, the biggest in New Jersey and its IZ has one of the biggest and oldest incubators and we believe it will make a good example of IZ.

4.1.1.1. About the city

With a population of over 2.8 million residents, Newark is the state's third-oldest major city, and New Jersey's largest city. Since the mid-1990s, it has enjoyed growth in both population and employment, and is successfully ravening the urban decline experienced over the previous 60 years. The city’s downtown is home to plenty of renowned retail stores, restaurants, and themed bars as well as new luxury residential housing and mixed-used development (Bastian, 2007). Fueling this prediction is news announced in mid-2007, that a planned $17.5 million capital project will remake 56 blocks of downtown Newark, and affect nearly 600 properties (Bastian, 2007). This revitalization is evidenced by increased residential and commercial development, including more cultural, dining, sports and entertainment options; and a renewed commitment of stakeholders to improve the community (Bastian, 2007). Newark is located in a very important strategic place: it is 12 miles from New York and its port with the Elizabeth Marine Terminal, is the largest in the East Coast and third largest in the country. The airport of Newark is offering 11
billion US dollars in economic activity to the region of New Jersey and New York and includes 110,000 jobs that derive from it. Newark is famous for its education: it is the largest education center in the state containing five colleges and universities, and more than 50,000 students (Porter\textsuperscript{2}, n.d.). Newark is characterized by innovation, manifested through the University Height Science Park, a planned Digital Century complex and five incubators. It is leader in arts and a cultural center in New Jersey (Porter, n.d.). In the following figure we present Newark’s competitive advantages (Porter, n.d.).

![Figure 4.2 Newark’s competitive advantages](http://www.isc.hbs.edu/pdf/Newark_Launch_Presentation_20060405vFINAL.pdf)

Newark also demonstrates a high level of job growth in ten largest clusters categorized by employment and its growth. In the following graph we present the performance of Newark in comparison to the rest of the region. Newark demonstrates a strong performance in a number of the important employment clusters.

\textsuperscript{2} Michael E. Porter, Bishop William Lawrence University Professor at Harvard Business School and Founder and Chairman of ICIC
As it is notable from the graph, Newark’s employment growth in most categories is higher than the one the rest of the region demonstrates. Especially in telecommunications, commercial services, local health services, education & training, local community and civic organizations, Newark’s rate is equal to, or even higher than the growth of the rest of the region (Porter, n.d.).

Newark is an economy that grows very fast and it is relying not only on already established clusters, but also in emerging clusters in order to sustain the job growth. In the following table we present the two categories of the clusters that Newark economy in relying on.
The Role of Innovation Zones in Regional Development – Empirical Findings & Analysis

4.1.2. Innovation Zone of Newark

Our focus shall be placed on the Newark Innovation Zone, which has been operating for ten years (Jacobs, 2007). Located just 12 miles from New York City, the Newark Innovation Zone is bordered to the North by Route 280, to the East by McCarter Highway, to the South by Market Street/South Orange Avenue, and to the West by Bergen Steer/First Street (New Jersey Economic Development Authority). The following map clearly highlights the borders of the zone.
Newark IZ is located in the center of the city, which gives it the advantage of being very close to vital infrastructure. This can be illustrated by the following map (picture 4.3), where the IZ is shown in relation to the centre and the rest of the city.

As it becomes clear from the map, the IZ is located in the center of the town and it is close to commercial and industrial centers and it includes governmental, education and medical facilities. As we mentioned before, Newark’s strongest clusters (by employment) are education, health, civic organizations, commercial services and telecommunications. This proximity of the IZ to the main resources of the city gives the opportunity to the actors involved in the IZ to interact. There are numerous actors that are collaborating in the IZ such as universities, institutes, companies, hospital and governmental organizations. The IZ enjoys a variety of infrastructure and a strategic location that enables its business activities and increases the access to it.

Figure 4.5 Map of Newark innovation zone
Figure 4.6 Newark city map

In the following table we present the key players in the Newark Innovation Zone, who are collaborating in the development and progress of this innovation zone. Academics, businesses industry & trade and government are the four categories of the actors in the zone.

<table>
<thead>
<tr>
<th>Academic &amp; Research</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>• New Jersey Institute of Technology</td>
<td>• PSE&amp;G (Energy, Transportation)</td>
</tr>
<tr>
<td>• Rutgers-Newark University</td>
<td>• Verizon (Telecommunications)</td>
</tr>
<tr>
<td>• University of Medicine &amp; Dentistry of New Jersey</td>
<td></td>
</tr>
<tr>
<td>• Public Health Research Institute at UMDNJ</td>
<td></td>
</tr>
<tr>
<td>• Essex County College</td>
<td></td>
</tr>
<tr>
<td>• University Heights Science Park</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry &amp; Trade</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Newark Alliance</td>
<td>• New Jersey Commerce Commission</td>
</tr>
<tr>
<td>• Newark Real Estate Board</td>
<td>• New Jersey Commission on Science &amp; Technology</td>
</tr>
<tr>
<td>• Newark Regional Business Partnership</td>
<td>• New Jersey Department of Labor Workforce Development</td>
</tr>
<tr>
<td>• New Jersey Technology Council</td>
<td>• The City of Newark</td>
</tr>
<tr>
<td>• BioNJ</td>
<td>• New Jersey Department of the Treasury</td>
</tr>
<tr>
<td>• Healthcare Institute of New Jersey</td>
<td>• New Jersey Business Portal</td>
</tr>
<tr>
<td>• Research &amp; Development Council of New Jersey</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4.7 Actors in Newark innovation zone

The innovation zone in Newark is performing various activities for the companies’ growth in the zone, and also for the overall development of the area. For instance, its nonprofit arts and culture now make up a 177.66 million US dollar industry. Facilities supporting this cultural revival include the New Jersey Performing Arts Center, Bean & Eagles Riverfront Stadium, and the $375 million Prudential Center, creating a multipurpose arena (Bastian, 2007).

The universities’ output can prove essential to the economic growth of the region. As mentioned in the previous chapter according to Goldstein - and the university concept we presented in the previous chapter, the output of the universities has some positive impacts of the region they belong. Here we present once again the initial concept with the inputs, outputs and impacts of the universities.
This collaboration between universities and companies has beneficial outcomes that improve the development of the region of Newark. Newark IZ includes five universities that are closely cooperating with the firms located in the zone. For instance, Essex County College (ECC) offers customized training in order to serve different businesses and governmental agencies in the region with a large number of businesses whose employees have enjoyed those benefits. ECC’s program Training Inc. provides short term job training, job fairs and inter-agency staff development training to residents that are seeking entry, reentry or mobility in the workforce (Essex County College). By employing this concept for the case of Newark IZ, we can present the following version of the previous concept including the current actors (universities, knowledge driven organizations, incubators, science parks) of this IZ and the possible impacts they have on the region of Newark. For example NJIT’s researchers collaborate with businesses and set a context for research that enables economic growth, creates new products, services and businesses (New Jersey Institute of Technology). New Jersey Technology Council maintains an active governments Affairs committee that consists of representatives of private companies, governmental agencies and educational institutions and they are all committed to the development of the technology community (New Jersey Technology Council). In the one side there are the different inputs and outputs that the actors (not only the universities) of the IZ produce and one the other side their impacts.
The Role of Innovation Zones in Regional Development – Empirical Findings & Analysis

Figure 4.9 Academic and research institutes outputs and expected economic impacts

The four universities that are located in Newark IZ offer to businesses skilled labor and they share their know-how with such companies. Newark is an education center (Porter, n.d.) with high growth in local education and training, and that provides a high level regional milieu with developed knowledge infrastructure: i.e. universities, laboratories, institutes. We have already shown that in Newark the main cluster that performs the highest growth, in comparison to other regions, are the telecommunications, the education & training and the health services. All this output and the collaboration between the different actors, result in increase of the regional capacity for regional development. The city's 60-acre University Heights Research Park (UHSP) is a reflection of this collaboration. This park is a collaborative venture between Newark's higher education institutions, and the City and Community of Newark. Basically, it is a private industry designed to bind the university’s research in science and technology and use them as a force for urban and regional economic and community development (Bastian, 2007). UHSP is uniquely positioned to provide technology businesses with a competitive advantage and their collaboration yields annually nearly $100 million of research (University Heights Science Park). Much of this scientific research is done in university sponsored technology centers located in Newark's University Heights district. The approximate technology-based mixed-use facility with offer lab, office, meeting, exhibit, and retail space is ranging between 75,000 and 100,000 square feet (Bastian, 2007).

At the same time the Newark Institute for Regenerative Healthcare is an institute that is dedicated to the creation of new technologies, products and services through research. This
vision will become reality through partnerships between medical and academic research vehicles and collaboration of them with the industrial sector - The Newark Institute for Regenerative Healthcare. The collaborative programs that this institute will organize, will give the opportunity to the academic institutions and companies in residence to maintain an ongoing program of R&D (The Newark Institute for Regenerative Healthcare). By new knowledge they will contribute to business innovation and regional creativity and increase the capacity for regional development.

Business innovation is one form of impact from the output we referred to. A success case of an innovation business in Newark IZ is that of LiveLOOK Inc\(^3\). The latter is a company that develops innovative online sales and customer service tools (Economic Development Authority). This company is located in Newark IZ incubator at the heart of the IZ and decided to grow in Newark after receiving 1 million US dollars by Edison Innovation Fund. The company will create one hundred new jobs in the following two years. The main reason behind this company’s decision to grow in Newark is not only the funding and governmental support that is enjoying, but also the fact that it is located in a region where academic and research institutions collaborate with different enterprises in order to develop new products and services. At the same time, it will enjoy the financial incentives and other benefits (Economic Development Authority). The economic development authority aims, through the IZ, to promote economic growth, to create new job opportunities, and contribute to the revitalization of the region. (Economic Development Authority)

Edison Innovation fund was established in order to develop, and sustain innovative technologies and life sciences that will lead to viable job opportunities. Its innovative funding methods have attracted many businesses and have driven the creation of job opportunities for the residents of New Jersey (New Jersey Economic Development Authority)\(^4\).

As we mentioned before Newark IZ has one of the biggest incubators for technology and life-science EDC (Enterprise Development Center) (New Jersey Business Incubator Network) in the state with 60 start-ups that can enjoy benefits such as: low cost office space, monthly networking lunches and free business advice (Jacobs, 2007). The success of this incubator brought many businesses to apply for entering the incubator, and for that reason it is planned to build another 100,000-square-foot building which will be named Digital Century Center (Jacobs, 2007). The main purpose of this incubator is to turn the area around it, into a high tech manufacturing zone and create thousands of job opportunities (Jacobs, 2007). EDC have graduated more than 79 successful businesses since 1988 (New Jersey Business Incubator Network). Some of these large employers even help in strengthening the business infrastructure, which includes public-private companies’ interactions: i.e. Public Service Electric & Gas Company, Prudential Financial, Verizon, Horizon Blue Cross Blue Shield of New Jersey, Continental Airlines, Gateway security, MBNA, and NJ Transit (Bastian, 2007). Many workers here are drawn from the Newark Principal Metropolitan Statistical Area, which can show the substantial employment rate for the city having a population of over 2 million. The businesses in this incubator have access to NJIT (New Jersey Institute of Technology) university resources. This includes “faculty collaborators and academic experts, characterization instrumentation, a clean room, machine shop and properties.

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\(^3\) As success case here we mean a success for the IZ of Newark that this company decided to grow in Newark

\(^4\) More information about the Edison Innovation funding is given in the appendix chapter at the end of this paper
manufacturing facility as well as MBA and technical student teams and interns to assist with product and strategy development’ (New Jersey Business Incubation Network). Also, this incubator offers every month, entrepreneurial networking forums and workshops. It is very close to the five universities of the zone, and it currently has 80 companies in residences that had revenues over $30 million in 2006, employed 285 people and have attracted more than $44 million in third-party funding BIN (New Jersey Business Incubation Network).

This knowledge infrastructure - five universities, institutes and science park, knowledge generation (from the universities and institutes and transfer of them through creation of skilled labor), knowledge agglomeration (knowledge base organization cooperating together with companies inside the zone) are fundamental drivers for regional development (Karlsson & Johansson, 2008) for Newark.

We can notice that the region of Newark effectively becomes a welfare region with the contribution of its IZ and its actors (Incubator, institutes, universities, hospital, and enterprises). Increase of its population, increase of enterprises and investment and increase of governmental funding. Therefore, Newark IZ can contribute to the reduction of regional inequalities and increase its economic development (Theory of Cumulative Causation). This development will have an impact on the population of Newark. According to the Location Theory, people prefer the environment that they are used to live in, instead of some social, racial or institutional atmosphere. And at the same time the different companies like to work where they were conceived, and be close to family location. Newark IZ is a way to keep its citizens in Newark. Newark’s residents that would have thought of working in another more developed region, now can stay in their home place and find job opportunities that emerge from the business activity in the IZ. However, Newark IZ might attract people from other close cities due to its level of development. Thus, the IZ can attract people from other places - even if they prefer not to change their environment, and it can sustain its native citizens and work force. LiveLOOk Inc. presents an example of a company that preferred to grow in Newark because of its IZ. This accumulation of businesses and people around a region can develop it and contribution to its further economic growth.

Newark’s economic growth derived from inside of its system. This agglomeration of the above mentioned phenomena creates a general positive effect. What helps them to develop and grow, is not only the high level of collaboration, but also the appropriate regional infrastructure and knowledge infrastructure that is surrounding them (New Growth Theory). Thus, it is important for Newark to keep on investing on new knowledge creation in order to sustain growth. According to New Growth Theory, knowledge brings growth, and as we mentioned before, even if the knowledge being transferred to people is tacit or explicit, the physical proximities are essential in order to ensure this transfer. Therefore, the possibility of emergence of spillovers is high. The chances of knowledge transfer and creation between firms in the IZ is very high because of the physical proximities. The knowledge that is created in a company in a specific sector will finally spill-over to other companies and other sectors (Karlsson, Johansson & Stough, 2000).
4.2. Thessaloniki

4.2.1. About the city

Thessaloniki is the second biggest city in Greece with almost 1 million citizens. It is located in the centre of the region of Macedonia, and today it has the second largest port and it is a natural exit for the Balkan Peninsula. There are a great number of research units in all fields (from engineering and biology to urban planning and the arts). According to official plans, Thessaloniki will become an economic innovation center, and is being transformed into a service economy. Further, it will provide specialized services in the field of education, culture, recreation and it has a rapidly growing logistic sector. Thessaloniki has an airport in the eastern part of the city and three universities (Aristotle University, University of Macedonia, and the International Greek University), as well as a Technological Institute. Aristotle University is the largest in southeastern Europe, and it has more than 75,000 students. The three universities have a high innovation and technological potential. The Innovation Zone of Thessaloniki and the technopolis inside the zone will embrace innovation in the region (West Area Thessaloniki business Park).

4.2.2. Thessaloniki Innovation Zone

Thessaloniki Innovation Zone (TIZ) is a mega-project in Southeastern Europe (Arzimanoglou, 2009), and is located in the eastern part of the city (Thessaloniki). It is an agglomeration of areas in the county (Innovation Zone of Thessaloniki). What makes TIZ innovative is its focus on highly innovative and technological activities, and the accumulation of relevant enterprises on this field. As we shall highlight further in the course of this research, TIZ has a clear focus on innovation and technologies.

The innovation zone of Thessaloniki is a special developmental venture that exploits and expands the Knowledge capital of the area and aims at the externalization of its value through the attraction and support of the business output and economical activities that will develop it. The TIZ is an innovative model and an open regional innovation system, where an accumulation of various activities in sub-regions of the zone is found (Alogoskoufis & Kalatzis, 2006). It is a governmental initiative and it aims at creating an accumulation of innovative high tech companies in the metropolitan area of Thessaloniki (Arzimanoglou, 2009).

The aim of TIZ is to boost the bonds among research and development and develop business milieu in order to attract new investments, to create new employment opportunities, and improve the life quality of the citizens and employers. The initiative for this venture is coming from the collaboration of the government and the private sector (Alogoskoufis & Kalatzis, 2006). The managing of the entire IZ is provided from an organization, Alexander Innovation Zone S.A., established for this purpose, and responsible for the plan, administration and realization of the Thessaloniki Innovation Zone (Arzimanoglou, 2009). This organization is working together with

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5 The matter of technopolis will be further elaborated in the following section
The Role of Innovation Zones in Regional Development – Empirical Findings & Analysis


Aims of TIZ:

The objectives of TIZ are:

- To develop the cooperation among the academic and business community
- To put into practice research and technological innovation in sectors important to the regional development.
- To encourage the utilization of new knowledge for commercial reasons
- To deliver regional development by bringing together researchers, academics, Technopolis, market business associations and entrepreneurs and strengthen their competitiveness.
- To create contacts with technopoles and Innovation Zones from other countries (Innovation Zone of Thessaloniki).

The main players in the TIZ are:

1. Education and research sector:
   - Aristotle University of Thessaloniki
   - University of Macedonia
   - Technological Educational Institute
   - Center for research and Technology Hellas

2. Existing and Future infrastructures (for ICT, Health, Energy, Environment, Agro-technologies)
   - Technopolies
   - Business Incubators
   - Technology Park (Innovation Zone of Thessaloniki)

What is different in the case of TIZ from the previous case, is the Technopolis of Thessaloniki. Technopolis of Thessaloniki is the first venture coming from private companies’ initiative and not a governmental. The first idea around Technopolis was to build an inter-Balkan, regional business base and an innovation pole in order to develop innovations and commercialization of them. The technopolis of Thessaloniki includes a business park which is design to accommodate high-tech companies and foster innovations. So far twenty SMEs (small and medium enterprises) have obtained building sites and they contain a large number of scientific and research personnel. Additionally, more than 25 companies are now in the stage of final signs for establishments of them in the business park. Also, the incubator in technopolis of Thessaloniki is a very important part of the business park and its thematic area is around computer sciences and telecommunications and themes that are related to business parks’ activities (Technopolis Thessaloniki ICT Business Park). Although technopolis is a private initiative, it enjoys the full support of the government.
So far in the incubator of Thessaloniki IZ there are seven high-tech start-ups that are carefully chosen according to their dynamics and perspectives. They have the potential to obtain a very important position in their market area. The criteria of entering the incubator are highly related to the quality, creativity and viability of the business idea. They are also related to the innovation of the technology that the business in question will bring, and its competitiveness toward other technologies.

![Figure 4.10 Current situation in the area – Links between research & market](Source: Innovation Zone of Thessaloniki, [http://www.theszone.gr](http://www.theszone.gr))

In the current situation in the area we can note that we have strong knowledge creation that derives from the two universities and the four technological institutes. At the same time, the commercialization of the knowledge is still weak and increasing competence of knowledge conversion into innovation that is coming from the incubators (Innovation Zone of Thessaloniki).

Benefits for the enterprises:
According to the plan of TIZ, the small and medium enterprises from Greece and abroad, the R&D departments of multinational companies spin offs, and investors will find great benefits by entering the zone such as:

- Proximity to very important academic, technological, research centers and logistics centers
- Attraction of talented staff with great initiatives
- Access to funding programs
- Entrepreneurial business environment
- Access to the markets of Southeast Europe (Innovation Zone of Thessaloniki)
- Tax incentives
  - 20% less tax rate for the employees in the zone
  - Fund to the innovative businesses for 5 years
  - Young innovative companies are excepted from the local and corporate taxes

(Arzimanoglou, 2008)

The next table presents the subsidies that the innovative enterprises will obtain in the innovation zone:

<table>
<thead>
<tr>
<th>Innovative Enterprise Categories</th>
<th>Max % State Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Intensive - Spin-offs</td>
<td>Up to 70%</td>
</tr>
<tr>
<td>Small and Micro Enterprises</td>
<td>Up to 50%</td>
</tr>
<tr>
<td>Medium-sized enterprises</td>
<td>Up to 40%</td>
</tr>
<tr>
<td>Large enterprises and R&amp;D departments of multinational corporations</td>
<td>Up to 30%</td>
</tr>
</tbody>
</table>

Source: Arzimanoglou, 2009

Figure 4.11 State subsidy for innovative enterprises

As presented in this table, the government has planned a number of different subsidies for the involved innovative enterprises in the IZ. For the knowledge intensive companies the government will contribute up to seventy percent of the total cost of the investment, and/ of the leasing cost of the equipment these enterprises will use. For small and micro enterprises the percentage is fifty percent, for medium firms is forty percent, and for large enterprises and R&D departments of multinational corporations it up to thirty percent (Arzimanoglou, 2009).

All these benefits will attract enterprises and employees and will embrace innovation and development. The residents of Thessaloniki are likely to be in a more advantageous position to find new job opportunities, and the area will enjoy investments and accumulations of foreign firms. Therefore, according to location theory the residents will stay in their home city and the enterprises that operate there maintain their position.
Benefits for the Academics
The TIZ will be the environment where the research of the academic community will be able to transform into products and services through start-ups. People from the academic milieu will participate, and their research will be the base of these enterprises (Innovation Zone of Thessaloniki).

The potential clients of the zone will be foreign and domestic SME companies with R&D and/or high tech-manufacturing branch, R&D departments of multinational Corporations, start-ups and investors (Arzimanoglou, 2009).

Players:

2 Research Centers
1 Technopolis (70-100 IT companies)
4 University departments
6 Training and education bodies (2 international)
2 Research institutes
2 Science & Technology parks
2 Business incubators
1 Science & Technology museum
3 Hospitals
3 Commercial centers
5 Multi-national enterprises
2 International hotels
1 Sports center

Below we present the area of Thessaloniki Innovation Zone. First we show the position of the zone in the country, then in the region and then the specific area of the zone with its borders. Also, we included a map of the IZ with the location of the main actors of the zone.
Figure 4.12 Map of Greece and Thessaloniki and location of TIZ
Source: Greece Map, http://www.greece-map.net

Figure 4.13 Map of Thessaloniki Innovation Zone
Source: Euroconsultants, www.euroconsultants.gr
Finally the innovation zone of Thessaloniki is a “community” that uses different laws and it has its own operational system, different that the one that Greece uses. In the next table we present the disincentives of Greece and the incentives the TIZ performs.
The Role of Innovation Zones in Regional Development – Empirical Findings & Analysis

Greece Disincentives | Thessaloniki Innovation Zone Incentives
---|---
Legislative plethora | Incentives law
Lack of law implementation | AIZ, S.A. has been trusted the development of the zone
Bureaucracy | One stop shop
Complicated tax system | Tax regulation in the incentives law
Several administrative entities and organizations are being involved | AIZ, S.A. is the only responsible administrative entity for the whole project

Figure 4.15 Differences between system of Greece and TIZ system
*Source: Arzimanoglou, 2009*

From the table we can see how innovation zone of Thessaloniki will enable the operations in the zone and avoid following the bureaucratic process that the government uses.

4.3. Comparison of the zones and Further Analysis

There are numerous analyses that look at why few regions successfully created the innovative technologies while few are not able to take the benefits of technological advancements (Bouwman et al. 2001 in Geenhuizen et al. 2005). From the analysis of innovation zone in Newark, we can analyze the four key important issues. The first key issue is building of the knowledge infrastructure for regional development. This can be noticed when the state government took the initiative to establish the innovation zone in Newark around an area with governmental, educational and medical vehicles. The location and the infrastructure provide Newark IZ with an essential location for its activities. The second important factor is the concern of funding, which is required by state or government of a particular zone/region, in order to support the operations of innovation zone. This funding is not only in form of capital, but also in the form of intangible funds for the morale boosting activities in that zone. The government and the Economic Development Authority are committed to the growth and support of the IZ, and consistently provide financial benefits to the actors of the IZ.

Third feature is the internal management and organization of established zone. In Newark IZ the responsible vehicle for the management of the zone is the New Jersey state Economic Development Authority (a governmental organization.) In the case of Thessaloniki the government established an organization (Alexander Innovation Zone S.A.), responsible for the
management of the innovation zone. Fourth and probably the most important issue, can be the integration and cohesion of the growth approach in the between partners and the measures taken by the government for sustaining growth. Its importance can be seen in the case of Newark innovation zone where the administration adopted a comprehensive approach in order to remove the inter-organizational problems for the development of the zone.

According to the objectives and the plans that have been composed for the future of Thessaloniki IZ, we can reflect these four key factors to TIZ. The zone is established close to institutions and university departments and other vital actors in the zone (enterprises, museums, commercial center, sports center and hospital) and enjoys very important infrastructure. Also, the funding methods and the fact that the government will facilitate the operations and the funding for the businesses growing in the IZ, adds an advantage to the future of the development of the zone and consequently for the region. The management of TIZ is also a very innovative way of organizing the activities and the shareholders of the zone. The creation of a company that is responsible for the zone and free from bureaucracy and other governmental restrictions will prove an asset for the TIZ. Thus the inter-organizational problems will diminish and the operations will be put into action more easily.

In Newark Innovation zone we can see that the government is committed to support Newark’s IZ, and consistently provides with financial benefits the companies involved in the IZ. Especially the Edison Innovation fund provides valuable financial support to the businesses in the IZ. Thus, it enhances innovation and development of the enterprises, which then lead to the growth of the region by attracting more business activities. TIZ has the potential to grow and succeed not only by focusing on innovative activities, but also with the undivided contribution of the government. On the qualitative assessment of Thessaloniki innovation zone and comparing it with the other, we can further analyze its growth potential. In this developing zone, where innovations and research activities can play an important role, a sturdy knowledge infrastructure can prove highly beneficial for the regional development. It has a good chance of becoming a successful innovation zone, especially based on the strong emphasis on innovation, highly educated professionals, supportive infrastructure and the presence of foreign companies in the region. Thus a number of core companies and few key venture capital firms in a particular technology (e.g. ICT) could serve as a catalyst to the development of the region. Some regions, such as Newark, have a number of specific regional circumstances which resulted in the additional contribution for the knowledge base economy. In TIZ there are many new high tech companies and other multinational enterprises that can boost the regional attractiveness and increase the employment rate.

However Thessaloniki IZ faced a number of difficulties in finally becoming a reality. Although TIZ has the prerequisites to become a successful innovation zone, it faces problems even before the official opening. The government performs a weak activity towards the funding commitment to the TIZ. In 2008 the government’s budget for TIZ was reaching only €500,000 for the first year of operation of the IZ. The initial budget was €1,5 million for the first year of operation (Mathiopoulou, 2007). At the same time for 2007, TIZ has already received only €200,000 out of the €500,000 that the government had promised (Mathiopoulou, 2007). Therefore the lack of efficient governmental funding hinders the development and realization of TIZ (Mathiopoulou, 2007). Hence, although TIZ has the prerequisites to develop into a successful innovation zone.
The Role of Innovation Zones in Regional Development – Empirical Findings & Analysis

(location, special legislations, clear focus in technologies and innovations, infrastructure and knowledge infrastructure) it lack of undivided governmental support. In the following section we will present the success factors that an innovation zone should fulfils in order to succeed.

4.3.1. Success/ failure factors

As we can see from the findings of the two zones, they share a significant number of characteristics; both of them are located in places where they can enjoy important infrastructure and strategic location. Both of the cities are the biggest in their respective countries and in their regions and they contain airports and ports with essential activities. Additionally, the universities that are involved in the innovation zone play important role in knowledge creation, and they cooperate intensively with the companies. Both of the IZ receive support from the government and funding benefits.

In the second chapter of the thesis we referred to the success/ failure factors of an innovation zone and we enlist them as follows:

- Existence of one or more well defined economic activities
- Existence of infrastructure of knowledge creation and provision of technological services (Universities, research institutes, laboratories, etc)
- The research activity is oriented towards the technological development and diffusion
- Existence of entrepreneurship that is oriented towards specific sectors of interest of innovation
- Strong linkages and networks (common research, exchange of personnel, common patents, relationships between customer-supplier) among the different enterprises and between them, universities and institutes
- Existence of entrepreneurial, innovative and collaborative culture in the enterprises, universities and institutes
- Existence of Media infrastructure
- Existence of investment capital and innovative funding methods
- Commitment of the government and existence of a common vision and plan of the development of the venture (Ministry of Development, 2005)

Newark and Thessaloniki IZ fulfill almost all the success factors. Their high level of economic activity characterizes both regions: Newark with its strong business sector in telecommunications, local education and training, and health services (see figure 4.3); Thessaloniki, on the other hand, with its education, culture, recreation and rapidly growing logistic sector to characterize its economy. During the presentation of our empirical findings we mention in both case studies the existence of important infrastructure and knowledge infrastructure in both cities. Ports, airports, proximity to essential locations, strategic position, rich social activity, universities, research institutes, technology parks, technopolies and knowledge driver organizations are part of the fundamental infrastructure and knowledge infrastructure of both locations and innovation zones. Newark IZ focuses on improvement of different technologies and embraces entrepreneurship and innovative activities in the zone. And TIZ’s clearly focuses on attraction of innovative, viable and high tech businesses - which is one
more feature of the success factors an IZ should have. Also, in Newark IZ there is a strong mobility of researchers and employees and the collaboration between the actors is very high. At the same time we can see that in the objectives of TIZ the close interaction among the shareholders of the zone is the main goal.

In both cases we can see that the governments have innovative funding methods. In Newark IZ the government invests a lot of resources for the zone. In both cases their plan and vision have a clear goal and a specific structure of the development of those ventures. Examples of such approaches are the ‘Edison Innovation Fund’ system and the creation of ‘Alexander Innovation Zone’ company in Thessaloniki and the different system that TIZ uses in comparison to Greece (see figure 4.15). The difference here is the commitment of the two governments in the funding support. In Newark the Economic Development Authority is committed to the promises that made to the innovation zone and it provides financial support to the involved parties consistently. On the other side in Greece the lack of government’s commitment to its financial support towards TIZ hinders the development of the latter. TIZ was planned to start its operations in 2008 but due to delay of government’s delivery of financial support the opening of the zone was postponed. Thus, unfortunately after 5 years from the first initiative of the IZ the realization of this concept is still in stagnancy (Magkriotis, 2009). The importance of the government’s role in the development of the innovation zone lies mainly, on the need of financial support. Innovation zone is a large range project that needs a consistent financial commitment in order to sustain the support of new businesses and development of the zone. Finally, another important part of the government’s role is the flexibility that it can perform in terms of legislations and taxes.
5. **Conclusion**

This chapter presents the main findings that derive from the previous chapter and that reflect to the purpose and the research questions. Here we aim at providing the reader with an overview of the thesis and the conclusions we came across.

An innovation zone is a geographical area that is located close to universities and hospitals and the enterprises that belong to the IZ will be given support, financial benefits and specialized supportive consulting services (Ministry of Development, 2005). “It is a geographic defined area, with specific geographic borders leading to the formation of an island of land with entry and exit points. This land can also become unique and privileged are through the institution of a special legislative framework applicable only to the Zone area” (Arzimanoglou, 2009). The purpose of IZ is the fast transfer of the knowledge and ideas from the laboratories to the market, in order to introduce new opportunities for economic development and creation of new employment opportunities (Ministry of Development, 2005).

As we mentioned in the introduction the purpose of the thesis is to analyze the role of innovation zones (IZ) in regional development. For that purpose we used the case studies of two innovation zones: Newark Innovation Zone in New Jersey (USA) and Thessaloniki Innovation Zone in Greece. The first innovation zone is operating now for 10 years while the latter is a new born IZ that will start operating in June 2009.

As derived from our purpose, we designed three research questions:

1. Who are the main shareholders of the innovation zone?
2. What is the role of innovation zone in regional development?
3. Are the efficiency and the effectiveness of the IZ conditioned by location?
4. What can Thessaloniki Innovation Zone learn from Newark Innovation Zone?

At this point you hereby the answers of the questions as derived from the empirical finding and analysis section.

1. **Who are the main shareholders of the innovation zone?**

The case studies of the two innovation zones can reveal many common characteristics between them. One of them is the shareholders of the IZs. In both cases we can see that the IZ includes great infrastructure and a large number of actors. The actors could be highlighted as follows:

- Universities
- Research Institutes
- Hospitals
If we categorize the shareholders of the innovation zone the main groups that derive will be Academic (universities), Businesses (Incubators, enterprises), Government (governmental organizations) and Research (Research Institutes). The idea of the IZ is a governmental initiative and most of the actors in the IZ receive financial benefits from governmental sources and enjoy special legislations that ease their economic and business activity in the IZ.

2. What is the role of innovation zone in regional development?

Through our research we showed that the actors in the IZ interact with each other sustain high level of collaboration. Although it proved difficult to find statistical findings and numerical data for the case studies of the two innovation zones, we used indirect connections to fulfill our purpose. The reason for creating an innovation zone is first of all to create a specific geographic area that will foster innovative activities, innovative knowledge utility and create new viable innovative businesses. This will create new job opportunities, accumulation of foreign and/or domestic business and consequently improve the development of the region they belong. Through the operation of the innovation zone the region becomes effectively a welfare region and consequently the regional inequalities are decreasing (Theory of Cumulative Causation).

Innovation Zones attract a large number of businesses and economic activities. These activities maintain their interactive nature by the innovative use of knowledge. In the zone that creation and transfer of tacit or explicit knowledge is essential for the growth and development of the involved parties in the zones. This can be seen in both case studies. Based on the reviewed literature and the different regional development theories, innovation zones are in a position to deliver regional development by bringing together academics, businesses institutes and foster innovation and business creation. This agglomeration of the above mentioned phenomena creates a general positive effect. What helps them to develop and grow, is not only the high level of collaboration, but also the appropriate regional infrastructure and knowledge infrastructure that is surrounding them (New Growth Theory). According to New Growth Theory, knowledge brings growth, and even if the knowledge being transferred to people is tacit or explicit, the physical proximities are essential in order to ensure this transfer. Therefore, the development that derives from the region would be able to maintain its residents, since people and enterprises prefer the locations they are familiar with and usually the places they were born (Location Theory).

3. Are the efficiency and the effectiveness of the IZ conditioned by location?

Newark and Thessaloniki are two large cities with many common characteristics. Both cities possess very important strategic location close to the sea and close to essential regions. Newark is the biggest city in New Jersey, located only 12 miles from New York and it includes one of the biggest ports in its nation. At the same time Thessaloniki is the second biggest city of Greece with a large port and holds a strategic position as being the natural exit of the Balkans. We can meet airport and developed transportation system in both cities and high level of knowledge
The Role of Innovation Zones in Regional Development – Conclusion

infrastructure. Newark includes five universities and a number of research institutions that serve as knowledge creation and knowledge agglomeration vehicles. Thessaloniki contains three universities as well as institutes and research centers that enable the creation and transfer of the knowledge between the parties that are involved in the innovation zone.

The case studies of the two innovation zones show that both IZs are located in places with strategic location and essential infrastructure that plays a very important role in the development of the zones. Due to these assets that their locations have, the IZ can attract easier business activities and develop further their operation and consequently create job opportunities and sustain their population. According to location theory, the people and the firms prefer to live and work in places that are familiar with and where they have been born. Thus, innovation zones can maintain they population by keeping their residents in their cities. Consequently, the location in which the innovation zone belongs plays an important role in the efficiency and effectiveness of the latter especially if this location contains the appropriate infrastructure and knowledge infrastructure to support concepts like innovation zones.

4. What can Thessaloniki Innovation Zone learn from Newark Innovation Zone?

Although innovation zone of Thessaloniki has not started to operate yet, it has a large number of assets of becoming a very successful innovation zone. Its characteristics are similar with those of Newark innovation zone (similar objectives, establishments, environment, infrastructure, special legislations) and the vision and mission of Thessaloniki innovation zone (TIZ) aim at bringing TIZ into the first positions in innovative activity. However, one issue that should be taken into account for the development of TIZ is the commitment of the government to the growth and prosperity of it. In Newark IZ’s case we can see that the government consistently provides financial support and new taxation systems and is committed to the development of the IZ. On the other side in Greece the laggard way of implementing the objectives of the innovation zone (due to lack of commitment of the government to support financially this project of IZ) brought delay to the proper operation of the IZ. Consequently, in Thessaloniki innovation zone there is not the same commitment on behalf of the government. TIZ was planned to start its operations in 2008 but due to delay of government’s delivery of financial support the opening of the zone was chandelled.

The government’s commitment to its promises and the consistent financial support to the zone is essential driver for development not only of the innovation zones but also for the whole region in which they belong. Thus, Thessaloniki IZ can learn from Newark IZ that the governments support is essential for the development of the zone and that the government, whilst attempting large projects likes this (IZ) should consistently support the IZ financially and legislatively.
6. Discussion and Further Research

In this chapter we will present our recommendations for further research on our subject. These recommendations derive from the challenges in gathering the empirical material throughout our research and from the research questions.

Innovation and regional development are two topics that were (separately) very much discussed by scholars, and in recent literature there have been attempts to combine and show how the former can contribute to the latter. Regional development is the main focus of many countries and for that reason there are different types of regional agglomeration systems such as: clusters, hubs, innovation systems, technopolies, or knowledge cities. However, there is a significant gap in literature when it comes to innovation zones. As a result, there is a need to look into the role of innovation zones in regional development and examine the possible benefits that the innovation zones can provide to the region to which they are affiliated. Based on the interview with the Greek professor Nikos Komninos it became clear that the meaning of the concept of the IZ is different but is different of this of the innovation system. IZ aims at creating a localized innovation system. This localized nature of the innovation zones can prove very useful in developing the regions they belong and they can offer valuable detail on the regions they belong. Therefore, our thesis can contribute in the understanding of this localized innovation system and provide the reader with an overview or the objectives of the innovation zones and the outcomes they produce. Especially in a specific region, innovation zones can prove essential not only for the development of the fore mentioned but also for the maintenance of this development. By examining these two cases of IZs we can see the common features that these IZs have and put emphasis on the role of the actors in the zones. Furthermore, through this paper the reader can find valuable information about the importance of knowledge and innovation in regional development and see the importance of the governments support in the development of the IZs. Overall the contribution of this paper lies in the issue that it deals with a localized agglomeration concept that it is not discussed so much from the scientific world and it can prove valuable for the development of the region it belongs; not only because of its localized nature but also because of the actors involved in it.

After research on innovation zones and their role in regional development we accessed a large amount of information that helped us in the analysis of our data. Unfortunately, there is not so much information on the innovation zones that can provide us with numerical evidence directly for the zones of their contribution to regional development. Data such as employment rate, number of new services or products, amount of investments in a specific region, number of new businesses caused by the innovation zones, regional statistical data of population rates and its connection to the existence of innovation zone in that region. Quantitative analyses of the innovation zones that could bring numerical results and statistics on the direct contribution of the zones to the development of the regions they belong could prove essential not only for the identification of the real involvement of the innovation zone in regional development but it might help in improving the performances of the innovation zones. For instance, the number of the businesses that the innovation zones create and at the same time the job opportunities that are generated in the zone can show how the innovation zones are involved in the reduction of the
unemployment by presenting statistical data and make a comparison to previous years. Also, a continuous quantitative research the comparison of the performance of an innovation zone over the years will actually show that if the innovation zones can bring a sustainable growth to the regions they belong.

The fore mentioned research could prove important for Thessaloniki IZ. TIZ’s objectives and establishments and the nature of the involved parties look promising for the future development of it and its region with a clear focus on innovations and creation of high tech businesses. The government has a clear vision on how to manage the operations of this zone and has already planned innovative funding methods and usage of knowledge and resources in order to fulfill its purposes:

- To develop the cooperation among the academic and business community
- To put into practice research and technological innovation in sectors important to the regional development.
- To encourage the utilization of new knowledge for commercial reasons
- To deliver regional development by bringing together researchers, academics, Technopolis, market business associations and entrepreneurs and strengthen their competitiveness.
- To create contacts with technopolies and Innovation Zones from other countries

Further research on Thessaloniki Innovation Zone could reveal not only the progress of the zone but also how the objectives (and if) took shape and what will be the outcomes. The same qualitative study we proposed earlier could produce important data of how Thessaloniki Innovation zone contributed in the development of the region of Thessaloniki. Quantitative data will directly show the level of contribution and deliver tangible result on the importance of the innovation zone. Also, this kind of research might reveal new success/failure factor for an innovation zone that might change the perspective of the operations of the innovation zones.

During our research we found many different agglomeration concepts like Innovation zones and we met a lot of difficulties in distinguishing those concepts. Some of them are innovation systems, clusters, hubs, industrial zones, knowledge zones, knowledge innovation zones, knowledge cities, intelligent cities, technopolis, digital cities, cyber city, virtual city and many others. Some of the fore mentioned concepts are very similar and it is difficult to distinguish them. Based on this rational, further research could be based on the clarification on these concepts in order to make clear the distinction between them. This approach could be implemented by using cases of these concepts around the world and examine the similarities and differences they have. Therefore this research could facilitate process of considering or deciding which concept is more suitable to each country or region and will offer valuable information about the benefits of those concepts.
References


The Role of Innovation Zones in Regional Development – References


The Role of Innovation Zones in Regional Development – References


The Role of Innovation Zones in Regional Development – References


Websites


The Role of Innovation Zones in Regional Development – References


Presentations


Appendix

Here we present the questions that the interviewees were asked throughout our research. Based on the reviewed literature there is no direct association of innovation zones and economic development on a regional or national level. However, as stated by the purpose of this thesis we attempt to identify any such connection whether they are direct or indirect. This is done through the application of the aforementioned theories and extensive review of empirical data.

1. Interviews

Interview questions to the interviewees. Here we present the questions that have been asked to the interviewees and the names of the fore mentioned.

**Interview 1:** Magnus Gramming, Business Incubator Manager in Science Park in Jonkoping, Sweden

- What is the role of the Science Park?
- Is it controlled by the government?
- What does it offer to the start-ups?
- Does it have incubator?
- How many start-ups?

**Interview 2:** Dr. Panagiotis Ketikidis, Vice President of City Liberal Studies in Thessaloniki, Greece

- Are there any data for Thessaloniki Innovation Zone?
- Who are the players of the TIZ?
- How can Innovations contribute to regional development?
- What is the difference between the Innovation Systems and Innovation Zones?

**Interview 3:** Nikos Komninos, Professor in Aristotle University of Thessaloniki, Greece, Specialized in Urban Development and Regional Innovation

- What is the difference between Innovation system and innovation zone?
• What is the definition of Innovation Zone?

• Can an Innovation Zone extend more than the boarders of a country?

• What is the difference between clusters and Innovation Zones?

• What is the difference between Innovation Zones and technological park?

**Interview 4:** Andreas Baresel-Bofinger, coordinator in Association of Information Technology Companies in Northern Greece

• When the TIZ did started building and operating?

• If is hasn't started yet, when is it going to start operate?

• What about the incubator? When did that star operating?

• Are there any data that show the contribution of TIZ in regional development?
2. Edison Innovation Fund

The following information were taken from the State of New Jersey website: 
http://www.nj.gov/njbusiness/financing/technology/edison.shtml

- **Edison Innovation R&D Fund**: Grants of up to $500,000 through the Commission on Science & Technology (CST) to support R&D related activities, with Economic Development Authority (EDA) “wrap-around” equity-like financing of up to $100,000 to support non-R&D costs.

- **Edison Innovation Commercialization Fund**: Up to $200,000 in the form of a subordinated, convertible note. Includes negative pledge on Intellectual Property. Warrants taken.

- **Edison Innovation Growth Fund**: Up to $1 million available, with 1:1 cash match. Financing has similar structure to Commercialization Fund. Companies must have delivered “proof of concept” and achieved successful, referencable, independent beta results.

- **Edison Innovation Technology Fellowship Fund**: Provides companies with access to new talent and expertise by paying the salary for recent doctoral graduates of New Jersey universities while they work for those companies. Award amount is $65,000 salary for the first year and $75,000 for the second, with an additional $10,000 each year to be spent on career development expenses for the postdoctoral fellow.

- **Incubator Seed Program**: Awards ranging from $20,000 to $50,000 provide competitive funding to assist emerging businesses achieve milestones in their commercialization path. Eligible projects involve: marketing, sales, or distribution strategies; prototyping; patent applications, searches or strategies; product development, and manufacturing and customer trials. Business must be located within one of the 12 CST-supported incubators.

- **Workforce Labor Training Grants**: Grants for up to $200 per instructional hour are available to technology business employers wishing to invest in their New Jersey-based workers to create a more competitive global economy. Average cost of instruction per trainee will not exceed $1,500, and the employer must match at least 50% toward total program costs.

New Jersey also offers tax credit programs and job creation incentives to spur the growth of our State’s technology industry, including:

- **Technology Business Tax Certificate Transfer Program**: Qualified technology businesses in New Jersey with less than 225 employees can raise money to finance their growth and operations by selling unused net operating losses and research and development tax credits to other profitable New Jersey corporations for at least 75% of their value.

- **Business Employment Incentive Program (BEIP)**: Companies seeking to relocate to or expand in New Jersey may be eligible for grants based on the number of new jobs created. By growing their employee base by at least 10 jobs within two years, eligible high-tech, life science companies can be reimbursed for up to 80% of gross withholding tax paid by new employees.