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Entrepreneurial Ecosystems and the Diffusion of Start-ups

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Management, Strategy and Policy suggestions for European academic incubators: the Creation of a Start-ups' Ecosystem in the South West England

This last globalization process is involving knowledge, finance and economic flows, questioning the efficacy of historically accepted "linear" models of economic development in favor of a view on innovation as an evolutionary and networked phenomenon, generated by an "ecosystem" composed by many different elements interconnected trough complex relations (Prahalad, 2005; European Commission, 2001; Philpott et al., 2011)[1]. Universities are increasingly seen as a strategic part of the ecosystems of innovation and the "Triple Helix" model between university-industry-government is a move towards a new management for these "global-national-regional" interactions (Etzkowitz, 2002).

This model of development requires for academic institutions to create the conditions for a more efficient and faster economic valorization of knowledge produced, which can spread many benefits inside the local economic environment. There is now a well-established body of literature that has examined the impact of this process of knowledge valorization, in particular technology transfer and commercialization (reviewed by Rothaermel et al., 2007 and Perkmann et al., 2013).

Many governments have been interested in creating a basis for high-tech innovation using technology incubators (Wright et al., 2006), as they support university spin-off companies trough networking opportunities with venture-capital investors, fostering business culture in

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1 In particular, Prahalad (2005) provided a definition for entrepreneurial ecosystem, according to which the ecosystem enables the individuals, enterprise and the society to combine effectively for the cause of generating economic wealth and prosperity. An important attribute of an ecosystem is to blend together the stakeholders who are often driven by different objectives and expectations.

a local area, and offering legal and daily business assistance (Piccaluga, 2001; Bonaccorsi and Daraio, 2007). However, European universities, particularly in Germany, Italy, Sweden, and the United Kingdom, even if they are rich sources of technology still lag behind in technology transfer efficiency compared to countries like US and Japan, and few of them have developed solid and fruitful relationships with venture investors (Eurada 2011; European Commission, State of Innovation Union 2011). Some studies have cast some doubt on the extent to which spin-offs have generated expected performance benefits in terms of economic impact and have critiqued the role and capabilities of incubators and technology transfer offices in adding value to spin-off ventures (Wright et al., 2012).

In this paper we will show that, despite growing interest among academics and policy makers worldwide, there is a gap in the comprehension of the relationships' management used in the wide process of knowledge exchange between academic world and industry. This is also evident by the lack in the literature of a definite and recognized methodology to evaluate university incubators (Dee et al., 2011).

We will then portray in this paper an evaluation of academic institutions that have developed to promote the transfer of technology, and a qualitative analysis of the impact of new policies. The case study of a consortium of five university incubators in the South West England, the SetSquared Partnership, shows an original model with respect to management, fundraising and connections with a wide-range of specialized actors, (serial entrepreneurs, nonprofit institutions, angel investors, international venture capitalists), research centers and the local economy. The SetSquared case allows us to examine how university incubators can manage the several relationships that constitute an entrepreneurial ecosystem and how these interactions can be enhanced, creating value for the local economic environment. Eventually, it also shows how a correct policy implementation could break the locked-in practices towards a lock-out solution, with a new architecture of economic interactions in a regional innovation system.

The Controversial Role of Universities in Entrepreneurial Ecosystems and our Methodology

The taxonomy of the literature on university entrepreneurship made by Rothaermel at al. (2007) portrays as separate research streams the one on entrepreneurial university and the one about new firm creation. In this paper we will analyse both arguments, looking at organizational elements inside academic institutions with positive or negative effects on technology transfer activities, at external economic and policy influences on university entrepreneurship eventually arriving to suggest a possible measure for the impact of incubation activities on local innovation systems. This new character of academia is often qualified "entrepreneurial"[2]. As noted in Philpott et al. (2011), most of the recent research

[2] As defined by Etzkowitz et al. (2000), an entrepreneurial university is any university that undertakes entrepreneurial activities ''with the objective of improving regional or national economic performance as well as the university's financial advantage and that of its faculty'' (ibid).

regarding the "entrepreneurial" university has stressed the role of technology commercialisation and spin-off creation, without considering the potential economic value of traditional academic activity of knowledge creation and dissemination[3]. In fact, this approach has not radically changed the role and the activity of universities, but it mostly brought to an "institutionalization of university-industry linkages trough the direct involvement" of academic institutions (Geuna and Muscio, 2009 p.94).

The so called "limited supply" hypothesis about European venture capital it has been questioned by many empirical researches (Da Rin et al., 2006; Dubocage and Rivaud-Danset, 2004) calling for a "new approach for venture capital-deficient regions giving greater emphasis to the demand-side." (Mason and Pierrakis 2009, pp1, 24). This shows the necessity of the development of an innovative entrepreneurial ecosystem with a central role of universities in its implementation process[4]. Since the mid-1990s, the strategy decided at the European level towards a knowledge-intensive economy encouraged universities to be increasingly involved in activities aimed at establishing new high-tech firms (OECD 1998; Colombo et al., 2012). This was presented to academic institutions both as an opportunity to increase their own monetary resources trough the commercial exploitation of research results, and as a way for boosting local economies with new firms and jobs, also providing an alternative source of employment for researchers (Iacobucci et al. 2011).

Despite high expectations, the performance of technology transfer activities by European public research organizations has been disappointing. Economic literature and official reports have identified many weaknesses, that we summarized and organized in four main problems: first, the inability of academic spin-offs to exploit growth opportunities; second, the alternative to incubation given by commercialisation of patents, usually posed as more rewarding, has instead showed a low profitability; third, there are distortions caused by public funding of academic incubators; fourth, entrepreneurial efforts by academic researchers are not recognized (and sometimes discouraged) in their career processes.

We sustain that these questions are linked together and that for dealing with them it is not sufficient to examine terms and conditions which may increase economic competitiveness and favor the development of research spin-offs with an institutional analysis. In fact, it is necessary to situate "knowledge based" entrepreneurship within the framework of the theory of the firm.

Knowledge, Firm Theory and Role of Incubators

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[3] While other researches (Cohen et al.'s, 2002; Lucas et al., 2009; Boardman and Ponomariov, 2009) indicate that some of the best knowledge transfer by universities takes place trough the channels of publications, conferences, consulting and, last but not least, the production of university graduates.

[4] European Commission (2007), Proposal for a Community Lisbon Programme 2008 – 2010; Horizon 2020 - The Framework Programme for Research and Innovation - Impact Assessment Report, 2011.

The role of stakeholders and networks are shaping the boundaries of enterprises, and managerial literature is analyzing these changes trough the tools provided by transaction costs economics and resource-based theory (Morroni, 2011; Aoki, 2010; Pitelis and Teece, 2009; Williamson, 1995). These approaches are considered particularly suitable for a context of complex knowledge interactions in conditions of uncertainty, because they allow for bargaining and contractual hazards. In precedent contributions (Miglietta and Peirone, 2008; Peirone, 2010) we provided a critical interpretation of principal-agent, transaction costs and incomplete contracts approaches, going towards an analysis of the links among production, investment and value creation. We used another view of the firm, where the enterprise is considered something more than a nexus of contracts: an "organism-system" analysed in its entire complexity. We started from the empirical evidence of recent years, which showed the importance of the complex organizational and informational structures used by firms to control and manage the various types of knowledge embedded in their production and organizational structures, so being able to exploit growth opportunities creating value through a systemic approach.

Knowledge can be linked to a larger definition of "production space" that considers the local characteristics in terms of productive history, factors endowment, relations between economic agents etc.[5] The firm can be defined primarily as a governance system for the production of knowledge, by means of a selective and selected combination of complementary activities based upon the capability to accumulate competence and knowledge. The central and main dynamic factor of learning activities (learning by doing; learning by using; learning by consuming etc.) is the accumulation of tacit knowledge that can eventually activate a process of incremental technological changes (Rosenberg, 1976, 1982). This process can be very complex and costly for a start-up firm, so the incubator acts as a governing body of the correct knowledge implementation towards growth and value creation in the first phase of firm's life. During the first periods of activity of a knowledge based enterprise, the learning process passes through a number of phases, adding progressively inflows of knowledge (from research institutions, financial investors, venture capitalists and international partners) as the venture develops. The need to develop a network with a critical mass of knowledge and connections means that the creation of a successful incubator requires more than just a physical space for rent and an investment in a qualified staff. It also requires a substantial amount of organizational learning, and time for knowledge to be generated and internalized into the incubator. This investment by the incubator is the

[5] The evolutionary literature about innovation and knowledge resources permits to break the notion of localised technological knowledge away from the sole contribution of human capital. On the side of the theory of the firm, theories has been developed about the co-evolution of technology, industry and market structure within an "evolutionary" context (Nelson and Winter, 1973,1974; Rosenberg, 1976), with "innovation systems" characterized at the level of a nation (Freeman, 1988; Lundvall, 1992; Nelson, 1993), an industry (Mowery and Nelson, 1999) or a technology (Carlsson, 1995) looking at the changes occurred in markets and at the effects of these changes on the production structure of modern companies, enhancing the fundamental contributions of Penrose (1959) and Chandler (1977) about learning and knowledge resources.

only way through which firms can become able to design a growth strategy absorbing the capabilities developed inside the incubator.
Many scholars (CIT.) show instead that incubators do not make substantial efforts in building a knowledge network with a sufficient scale, sometimes lacking also a proper organization to perform this activity. In addition, the selection process of the incubated companies is mostly based on the presence of a patented technology than of a proper growth strategy for their business. This happens because academic incubators have an organizational structure that is more oriented towards hi-tech research spin-offs, but this results in a lack of business strategy for the subsequent growth phases of the firms. Hi-tech is actually different from hi-growth: they can sometimes occur together, but there is no coincidence of the two concepts. The final outcome can be very expensive in terms of resources, but with poor results in terms of value created.

The Lack of Assessment Method for Technology Transfer Activities

In this context, it is usually posed as a more rewarding alternative the creation of an office focused only on maximizing licensing revenue arrangements (Åstebro and Bazzazian 2010). However, this also presents a similarly restrictive view of potential economic impact since the number of licenses that generate significant returns can be limited. For instance, patenting and licensing activities are often only of marginal relevance to areas outside of software and the biosciences. This suggests that many academic disciplines may be unsuited to undertaking such activities (Mowery et al., 2004).
In face of this (not encouraging) evidence, many scholars also stress a methodological problem about the necessary improvement of the quality of performance indicators for incubation, that are now making difficult even to compare results of different studies on this argument. Despite the growth in literature on incubation, few researches have applied a robust evaluative approach for assessing the economic contributions of incubators. Many quantitative academic papers attempting to evaluate the impact of incubators have more conservative results than industry studies, and often contradictory findings. Furthermore some of these analyses focus on science parks as opposed to business incubators as few studies have access to meaningful quantitative datasets for business incubation alone, which makes comparisons challenging (Dee et al., 2011).

Academic Progression vs Entrepreneurship

Policies on innovation are not considering either the internal organization of academic institutions as an instrument to promote technology transfer. Current academic progression processes adversely affect academic's entrepreneurial efforts: university's reward structure is based primarily on publications and does not adequately reward entrepreneurial activity. Some studies (Clarysse et al., 2011) have showed that academics who operate in a context where academic entrepreneurship is stimulated will have greater likelihood of being

involved in entrepreneurial initiatives created by others or in founding entrepreneurial ventures themselves.

These figures reflect the nature of the incentive structures in place: they are attractive to local entrepreneurs from outside the university because of the lower cost of rent for a start-up firm (begins lower then increases over time with the success of the start-up); they have shared access to administrative support; support through personal high quality mentoring (a combination of incubator personnel/business mentors); and access to wider industry and enterprise networks. However, the incentive structure for academics, particularly where academic publishing is highly valued, tends not to reward third stream activity in the same way.

The Distortions caused by Public Funding

It is clear then the importance, especially in Europe, of public funds for this type of activity. But in the competition to attract public funds many incubators need to constantly demonstrate "success", which can lead to over-reporting successes and under-reporting failures especially when self-reporting (Hackett and Dilts 2004). Funding sources generally rely on intermediate outcomes at least as much as they use hard measures of real growth and profitability. The fact that most incubators remain either wholly or partly publicly funded takes also to considerable distortions, as showed by Hackett and Dilts: the two authors propose an application of real options[6] to incubation in an attempt to offer a robust way of assessing incubator value and managing capital investments, listing five potential outcomes to the incubation process where outcome 4 (operations of the incubatee are terminated, with losses thereby minimized) is a success and outcome 3 (an incubatee becomes part of the "living dead") is a failure. They show that most subsidy-providers, like public authorities, would not operate with such a logic and would instinctively prefer an option 3 outcome to an option 4 outcome. This happens because their evaluation process is not centered on knowledge creation and implementation, but on outcomes easily understandable by the general electoral base of politicians, who aim to be re-elected presenting some kind of results. Policy is then more interested in the number of spin-offs created, and rates of firm survival in the incubator, the number of created jobs. But job creation, while a popular metric used to evaluate incubation, is not generally considered a useful measure of incubator value. An emphasis on job creation also contradicts the advice of many investors who are acutely aware of the need to control spending by investee firms, which often means delaying recruitment.

Political strategies on innovation create then, especially at the local level, *path dependent* systems aimed to reinforce the established institutional structure, without considering the dynamics of innovation generation and the challenges posed by globalization, which need to leverage international knowledge flows to strengthen and contribute to territorial economic development. A crucial strategy is to leverage the scale of the knowledge network of the

[6] A real options approach, originally used in corporate finance, applies option valuation techniques to capital budgeting decisions, so creating options for when to make, abandon, expand or contract a capital investment.

incubator, also trough international connections, eventually transferring these resources to the incubated firms.
A deeper comprehension of the underlying processes of incubation and the types and timing of interventions may be critical for achieving accelerated firm growth, because incubators deliver added value through the provision of more intangible factors – the diagnosis of business needs, support with business planning, introductions to peer group networks, the deployment of professional networks, mentors and funding agents – than through their physical infrastructure. The more tangible elements of the incubator, physical space, staffing, management and external networks are less important than the way in which such factors are configured to support the business proposal.
The quantitative outputs of the incubation process seem to be more important for literature and policy, than the process that has created such outcomes (Patton et al., 2009).

Our Methodology

These are the reasons why we decided to analyse a case-study by means of a qualitative methodology that allows to examine the management of the crucial interactions into an entrepreneurial ecosystem centered upon a university incubator. Adding inflows of knowledge (from financial investors, venture capitalists, international partners and institutions) is crucial for building an entrepreneurial ecosystem, but few researches have analysed academic incubators with regard to this managerial capability. We will assess this management strategy using the tools provided by institutional theory, "resources-based" literature and evolutionary economics perspectives.
In particular, we will look at the dynamics that favor the processes of knowledge accumulation, examining:

a) the policies on knowledge diffusion; policy makers should develop policies aimed at financing both in basic research, with respect to which knowledge spillovers occur, or application type research in the areas of specialization of the local economic environment, facilitating the emergence of start-ups and spin-offs in the same sectors, supporting the transfer of know how between companies and between them and universities (Castells and Hall, 2000; Cesaroni, Gambardella, 1999).
b) the nature of the innovation process; the knowledge generation that characterizes an innovative ecosystem, is facilitated by the presence of major scientific institutions, public or private, and by the existence of a strong production system, attracting investors from outside the local area (also venture capital firms and business angels);
c) the attraction of external knowledge resources (students, researchers, entrepreneurs and qualified investors) from the other countries, can strengthen the process of accumulation of knowledge towards the creation of an innovation ecosystem.

The case-study: new policies in the UK and the SetSquared Partnership

In the UK, higher education policy, and its funding streams[7], have emphasized economic competitiveness and wider societal roles of universities and incubators for building a knowledge-based economy able to compete in the global market place (Freitas et al., 2013). As a result, over the past decade there has been a shift in government policy, from one focused upon research excellence and its dissemination amongst the academic community, to one which now includes a range of knowledge-transfer activities with the wider business community, and other stakeholders. Between 1989 and 1997 the proportion of public funding into universities significantly declined. This led to institutions having to generate more income from non-governmental sources in what came to be known as **"**third stream" funding (in addition to the primary sources for teaching and research), and to policy initiatives from the Government and funding councils to support such strategies. In 2002 the *Investing in Innovation* Strategy (DTI, HM Treasury and DfEE, 2002) highlighted issues surrounding the long-term sustainability of university research. It focused on the need to encourage greater collaboration between universities and the business sector through increased investment in knowledge transfer activities.

This new configuration of policies provides a *lock-out* possibility for new actors and initiatives to emerge, with the potential to destabilise path dependent policies reinforced by existing social practices, relations and boundaries. This wider policy environment can be viewed as an opportunity structure that gives rise to the possibility for, though does not predetermine, the emergence of new sites to be created, such as business incubators, for new relationships to be formed, and for new knowledges to flow across boundaries.

The British government approached this newer mission for universities by promoting the idea of 'usefulness' (e.g.), arguing that universities could raise the innovative performance of industry, as well as to significantly contribute to city-regional development. In relation to the latter case, this view was encouraged by evidence suggesting proximity of firms to universities was critical for the transfer of knowledge between them. The economic boom of the late 1990s, energised and enabled by funding schemes for new innovation support mechanisms, resulted in an upsurge in spin-off activity from UK universities.

A comprehensive and critical assessment of the obtained results has been done trough the Lambert Review of Business–University Collaboration of December 2003. The Report noted that there had been "a marked change of culture" (p. 3) among universities towards greater collaboration with business, and that government funding for knowledge transfer activities had been important in this change.

However, the report also pointed out the *lack of demand* from the private sector for those knowledges and skills in universities. The growing interest in the UK in promoting spin-off companies from universities (cf. DTI, 1998; HM Treasury 2002) resulted in an excessive

[7] The British government designed three key programs: University Challenge, Science Enterprise Challenge, and the Higher Education Innovation Fund. University Challenge provides venture capital funding for university-based spinoffs. Science Enterprise Challenge resulted in the creation of Science Enterprise Centres at UK universities which provide training and financial services to graduate student in entrepreneurship. The Higher Education Innovation Fund (HEIF) provides direct financial support for projects that strengthen connections between universities and firms (Lockett et al., 2005).

number of low quality spin-offs, with university infrastructures that were not equipped to support these ventures. There was also a concern that spin-offs were being given "… undue prominence in consideration of university performance in research commercialisation" (Minshall and Wicksteed, 2005).

We sustain that the constraints that hinder interactions and an effective creation of entrepreneurial ecosystems around universities have to do with poor management and strategy of incubators and technology transfer offices. One of the reason of the mediocre performance of spin-offs in UK, as indicated by the Lambert Report, was identified in the tendency among these firms to concentrate their efforts too much on the technology, at the expense of finding markets and customers (Patton et al., 2009). This comes from a lack of training by incubators, that in many cases were not able to create a process of knowledge accumulation leveraging the connections with local and international innovative clusters. After the Report, UK policy changed. At the European level, the Processes of Bologna and Lisbon combined with the creation of the European Research Council, and the European Technology Platforms can be considered as signs of the ongoing changes of the structure of the academic sector. The formation of these processes is strengthening the incentives for collaboration and differentiation that exists today within the European Union. Cooperation has become a significant type of competitive advantage. According to Harman & Meek (2002) and Georghiou & Duncan (2002), university alliances and partnerships, even mergers, are among the responses to these changes. Forming alliances may also provide an opportunity for universities to increase their resources by becoming more competitive, and to maintain their brands for which they are recognized.

This happened in Britain as well, and in this respect the case study examined in our work appears of particular interest: four hi-tech incubators making up the *SETsquared Business Acceleration Partnership*, established in 2002, between four universities (Universities of Bath, Bristol, Southampton and Surrey) in Southern England, now enlarged to five with the entrance of Exeter University in the partnership. These university incubators are have been funded over time through a range of Government programmes, aimed at creating linkages and new opportunities for firm development as well as mutual learning between the university and the economy of the city-region.

The SETsquared partnership is an alliance supporting and encouraging the development of start-ups in collaboration with industry, by providing access to university knowledge and their facilities, as well as business operations and technology transfer through services specifically targeted at high-growth potential technology start-ups from both within and outside the university setting (SetSquared Partnership 2007). These institutions are located in one of the strongest economic areas in England and hold research staff of 6,500 with a budget of £266 million accounting for 7% of the UK's research budget, suggesting that research activity is particularly strong.

Our investigation has been done through interviews, direct visits to the incubators and review of the literature on SetSquared.

Public Funding and Internationalization

As said above, the learning processes activated by the cooperative relationships involve the formation of networks different from the past, in terms of types of actors involved and modes of governance and operation. The networks building the ecosystem around *SetSquared* present patterns of managerial strategy at local, national and international levels[8], stimulated by the new governmental policies on Universities. Many SetSquared activities have been funded by the governmental HEIF funding stream. In combination these five universities hold research staff of 7.400 people accounting for 10% of the UK's research budget. One of the objectives of the Partnership is to invest in "Top Research" that is considered an essential component to catch the interest of venture capitalist and foundations, which are interested in university companies. For this purpose, and with the intention of gaining access to seed capital, all four SETsquared Partnership universities have agreements for accessing support for commercialisation activities, seed capital finance, and ongoing strategic and financial support for spin-out companies to maximise their chances of success. Whilst progressive rounds of public funding enabled the Partnership to expand, this was not a straight-forward process: the early collaboration between Bristol and Bath to secure funding from the University Challenge Fund was the outcome of a forced relationship by the Office of Science and Technology (OST). Global collaboration is essential in their objectives, and for this they work with a Department of Trade and Industry's £1.5 million "Science Bridge" grant. With this type of funding the Partnership has been able to develop a link with the University of California San Diego, and the University of California Irvine in the United States. The aim of this has also been to identify areas of collaboration for research in the areas of bioengineering, wireless technology, and sustainable and environmental habitats (SetSquared Partnership 2007).

Spin-ins and Spin-outs

The Partnership maintains that some 170 companies have been supported by the different SetSquared Centres, and that private investors have been contributing with over 15 million pounds. In the last six years, companies supported by the Centres raised over £120 million. 100 businesses came out from the Centres, usually after 18 months to three years. A remarkable result has been the development of four spinout companies since the start of 2002, which has created a combined market capitalisation of over £160 million. Especially in the European context, it is not so frequent that research spin-offs arrive to be listed on the stock exchange. In addition, the partnership asserts to have raised over £45 million of follow-on funding for various ventures, and in a number of trade sales.

Across the SetSquared incubators between 80-90% of the firms incubated come from ideas from outside the university (*spin-ins*) whilst the rest (10-20%) come from inside the

[8] A good example is the annual SetSquared Investment Showcase in London, run by all the incubators together, where investors from all over the UK, EU and US are participating.

university (university spin-offs). These figures reflect a particular management strategy based on business incentives: these incubators are attractive to local entrepreneurs from outside the university because of the lower cost of rent for a start-up firm (begins lower then increases over time with the success of the start-up); they have shared access to administrative support; support through personal high quality mentoring (a combination of incubator personnel/business mentors); and access to wider industry and enterprise networks both locally and internationally. All these characteristics are empowered by the fact that startups are associated to a "university partnership", a very respectable presentation that looks as a "big" actor in the market, and by the proximity to academic researchers and laboratories.

Different Incubation Models

Each SETsquared Centre has a distinctively different business model.
In Bath more than 50 companies have been supported at the Innovation Centre, 90% of which came from the wider business community (spin-ins), and the other 10% are University spin-outs. In Southampton subsequently 28 (very early stage) firms have joined the incubator and 15 firms are current members. Like Bristol and Bath, the majority of firms (22) that have joined the incubator are external to the University. Nevertheless, in Southampton some of the more successful proposals have been developed from within the University (Patton et al., 2009). The University of Southampton is considered to be the one of the most successful in the world, along with Stanford in California, in the creation of spin-out companies (Franklin *et al*, 2007). The University has created 12 spin out companies since 2000 and over 50 since 1969 and, if the number of indirect spin-offs is taken into account, the number is over 100. Between 2001 and 2007, Southampton was one of the most successful universities in the UK in terms of investment in its spin-out companies.
The case of Southampton University confirms the importance of the incentives that academic institutions can create for stimulate entrepreneurship from their researchers. The University has decided that enterprise was a key part of its culture, and a key part of the University's offering both to students and to staff. Based on that strategic decision, the University decided essentially to invest in enterprise and entrepreneurial activity.

Cooperation

Across the five sites, there is growing collaboration bilaterally, or based on local proximity. Collaborations between Bristol and Bath centres are noted, through the Bristol Science City, Science Park (S-PARK) and BEN network. Many of the Bath Innovation Centre member firms are also located in Bristol. The three regional networks run by the Bath Centre support start-up firms, the business community and academia, in the Bristol-Bath area. Collaboration for events between Bath and Southampton, Bath and Surrey were also mentioned in the interviews. Southampton and Surrey Centres also collaborate due to their geographical

proximity. However to date there have been no university spin-off firms at the Centres based on collaborative research between the partner universities.

SetSquared Strategy: Strengths and Weaknesses

On the contrary of many incubators, at present the success of SetSquared centres, when measured in terms of the numbers of start-up companies, is dependent upon ideas for enterprises emerging from *outside* the university, rather than inside. From the case of the SetSquared Partnership clearly emerges that policies focused on incubators need to pay attention to incubation as a process, rather than simply on the visible hardware. It is also important the presence of different models across the five centres, showing that there is no one way to promote incubation. Whilst this is an obvious point, and one that that been noted elsewhere, the wider regulatory environment of universities, particularly as a result of the implementation of new public management, tends to undermine rather than contribute to diversity.
Through our analysis, multi-level dimensions of organisational strategies and coevolution of multi-spatiality in the development process of an entrepreneurial ecosystems are illustrated. This case study further demonstrate some key points:

- ✓ Management of a university incubator is mainly a governance activity of knowledge flows at both local and global level. This means that each incubator, like company divisions, can specialize in a particular field where its learning capability is particularly strong. In this context, competition and performance measurement across the institutions are particularly important.
- ✓ A university incubator aimed to create an entrepreneurial ecosystem has to become attractive for businesses and investors situated outside academia. The mechanism of "spin-ins" that want to be close to researchers and technological innovation, and the active involvement of entrepreneurs in mentoring activities, are approaches that proved to be effective in attracting private funding for SetSquared startups. This is an interesting strategy and a useful suggestion for assessing incubators' success or failure.
- ✓ Building a brand, which is able to amplify the local resources at national and international level, is an important part of the strategy. Either the previous points and this one about cross-partnership brand-building allow for economies of scale in incubation activity, a subject that has received little study thus far.

Viewed from the opposite direction, Incubator Directors, with their industry backgrounds, contacts and networks, have instead limited networks *within* the university, and therefore limited capacity to mediate the directional flow of this knowledge across the academics. Those founders that join the incubator rarely integrate to the degree necessary to develop potential synergies from the proximity of like minded individuals, similar business contexts or overlapping technology. Consequently the notion that firms in the incubator may build

collaborative activity relating to research, products or markets in some cases simply does not materialize (Patton et al., 2009). This is a very different situation with respect to countries like Italy, where, while academic incubators seems to have failed to perform the bridging function between university spin-outs and potential industrial partners, it has been instead identified a capability of these incubators in supporting non-academic high-tech start-ups in establishing collaborations with public research organizations, thereby providing an effective bridge with the academia (Colombo et al., 2012).

Apart from the case of Southampton University, a continuing cause of friction between the academic culture and engagement with incubator and other third stream activity is the incentive structures for academics, particularly arising from the research assessment regimes that have been in place in the UK. However, as said before, simply putting policies into place is not enough to smooth the tensions in cultures. The incentive structures will need to alter, but in ways that both missions are not at odds with each other.

Concluding Remarks

This paper focused on innovative regional eco-system, defining the assets to rely upon, investigating how players relationship (as a network) can impact on innovation adoption for development, also trough a lock-out solution from path dependent policies. The case study of SetSquared partnership helps to investigate how an incubator can interact with local and international economic environment to deliver an effective level of support required to foster the development of high-tech business proposals. This model of incubation has succeeded to overcome many of the shortcomings stressed by the official report on University-business collaboration, trough a flexible approach adapting to the characteristics of the regional eco-system and, at the same time, incentivizing collaborations between universities. The case also shows the difficulties in changing the culture in the academia towards entrepreneurship. We think that the analysis portrayed in this paper has been fruitful of some results about the assessment of the role of university incubators in the creation of entrepreneurial ecosystems. Our work can also provide some policy suggestions, especially for the European context.