

A Systematic Approach to Studying Support Initiatives for Innovation and Entrepreneurship in a Crisis Economy

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ABSTRACT

We propose a conceptual framework for studying support initiatives for innovation and entrepreneurship and discuss how it can be applied in the Greek crisis context. The research question relates to what factors are put forth in the extant literature as potentially influencing and shaping effective support initiatives for innovation and scalable entrepreneurship, and how these can be linked in a conceptual framework for analyzing and assessing such initiatives. By integrating coevolution theory, innovation systems literature, open innovation, innovation and entrepreneurship policy, and public-private partnerships literature, a framework is developed that also aims at integrating the innovation and entrepreneurship support research streams as both are directly linked to economic and social development, and the one needs and reinforces the other. The underlying rationale of programs and initiatives that intend to foster, canalize and support innovation and entrepreneurship is to achieve economic development, hence a deep crisis context, like the one that has characterized Greece since 2010, seems particularly relevant for studying how this objective can actually be achieved.

Keyword: Innovation, Entrepreneurship, Innovation and Entrepreneurship Support, Innovation Systems, Coevolution.

INTRODUCTION

This research unfolds in the intersection of the academic disciplines of *innovation*, *entrepreneurship* and *public policy* studies, and is conducted in the Greek crisis context. The research problematic relates to *what public and private players do* and *how they act and interact* in the process of building and implementing an ecosystem for innovation and scalable entrepreneurship as a reaction against, and a way of getting out, of a national deep crisis context. This deep crisis context has unfolded since 2010 and its characteristics can be summarized as follows (Gogos & Kosma, 2014; Pasiouras, 2012; Zavras, Tsiantou, Pavi, Mylona & Kyriopoulos, 2013): Loss of national solvency; Economic recession; Scarcity of funding for investments; Austerity measures; Discontinuous changes in institutional frameworks; Escalating unemployment; Political instability; and Deep uncertainty regarding the viability of the public debt, which has exploded during the period. To this troubling list were added the capital controls that took effect on June 28-29th 2015, which, together with the accelerating political uncertainty during 2015, and new austerity measures being implemented during 2016, have put an unforeseen stress on the private economy in particular, including a negative return of the Athens Stock Exchange Index of minus 51% over the last three years (March 2014-March 2017).

In spite of this unforeseen economic turmoil in a Eurozone country, entrepreneurship has become a buzzword in Greece during the crisis years, and a lever in the efforts to restore growth and create jobs in the absence of the traditional career alternatives in the public or private sectors, which have retracted substantially. Although the numbers are impressive, with over 50 institutions having been set up to support entrepreneurship, 95% of them launched since 2010, and more than 80 million Euro of seed capital available in 2013, the Greek entrepreneurial landscape lacks many elements of an ecosystem (Endeavor Greece, 2013). As the Endeavor study emphasizes, the state has also "ridden the entrepreneurship trend" (Endeavor Greece, 2013: 5)

setting up or funding many of these institutions and initiatives, lacking, however, a clear strategy for where to focus and how to effectively support start-ups and innovation efforts in established companies. Moreover, the parallel destruction of many of the countries industrial 'commons', i.e., collective capabilities such as R&D know-how, engineering skills and manufacturing competencies (Pisano & Shih, 2009), makes both the access to resources and the prospects of local off-set markets extremely uncertain for startups and innovators alike. Departing from this, the research question addressed in this paper can be formulated as follows: *What factors are put forth in the extant literature as potentially influencing and shaping effective support initiatives for innovation and scalable entrepreneurship, and how can these be linked in a conceptual framework for analyzing and assessing such initiatives?*

The main bodies of literature that inform the research and constitute its conceptual base include coevolution (e.g., Lewin, Long & Carroll, 1999), innovation systems (e.g., Malerba, 2005), entrepreneurship ecosystems (e.g., Feld, 2012), public-private partnerships (e.g., Hodge & Greve, 2012), and policies and support mechanisms for innovation and entrepreneurship (e.g., Edquist & Zabala-Iturriagoitia, 2012). We strive for an integration of the fields of innovation and entrepreneurship from the perspective of support initiatives. This is because although much of entrepreneurial activity involves innovation and entrepreneurs are critical to the innovation process, both scholars and policy-makers tend to pursue research and interventions in separate silos that rarely meet and converge (Brem, 2011; Lindholm Dahlstrand & Stevenson, 2010).

The paper is organized as follows: Section two introduces the broad area of entrepreneurship and innovation support. Section three introduces the important literature streams that will underpin the research. In section four the literature is integrated in a conceptual framework for studying innovation and entrepreneurship support, which will act as a framework for further research. Section five, finally, emphasized the Greek crisis context and concludes the paper.

INNOVATION AND ENTREPRENEURSHIP SUPPORT

The literature stream with the most direct impact on the present research is studies that deal explicitly with the structure, organization, processes, conditions, outcomes and problems/difficulties of public interventions in favor of innovation and entrepreneurship. We structure our analysis around three fundamental questions: Why, What and How support should be provided?

Why Should Governments Support Innovation and Entrepreneurship?

Lerner (2010) identifies three fundamental rationales from a review of extant literature. First, it is widely recognized that *innovation favors economic growth* by getting more out of the same level of input. Countries or regions with consistently high level of innovation, which implies effectiveness in R&D, new knowledge creation, and entrepreneurial tissue to bring new offerings to markets (Diniz & Sequeira, 2012), are also consistently leading both economic and social development (Furman, Porter & Stern, 2002; Sarasvathy & Venkataraman, 2011). Second, entrepreneurship is needed in order to *bring new discoveries to the market*, and can also be a *source in itself for stimulating innovation* (Lerner, 2010). Third, there is the assumption that *public institutions actually effectively can promote entrepreneurship, innovation and the related essential ingredient of venture funding* (Lerner, 2010). The approach governments should adopt is crucially dependent on the industrial eco system in a particular geographical, technological and socio-economical space. It is widely recognized that innovations 'run in packs' (Van de Ven, 2005), are dependent on industry 'commons' (Pisano & Shih, 2009) and that entrepreneurship communities have to be driven by entrepreneurs themselves (Feld, 2012). Hence, public initiatives should support and facilitate these eco systems, not 'impose' what they should or not should do, or artificially try to 'force' them in particular directions.

To sum up, public bodies should support innovation and entrepreneurship because both are directly linked to economic and social development, and the one needs and reinforces the other. Moreover, new entrepreneurial ventures both generate inventions and act as between-takers shuffling inventions through the laborious paths from labs (or garages) to markets. However, support must be canalized to favor and facilitate natural innovation and entrepreneurship processes unfolding in systems of interrelated technological, economical and social factors.

What Should be Supported?

Research on entrepreneurship and innovation dynamics focus mainly on the conception, funding and execution of new ventures (Short, Ketchen, Combs & Ireland, 2010) or on the transformation of SMEs towards more innovation-driven business models and outputs (Knockaert, Vandenbroucke & Huyghe, 2013). These areas are also reflected in most of the public interventions encountered.

Support for *conception* of new ventures will typically comprise some kind of semi-structured process ranging from idea generation and team formation, to definition of an initial business model and completion of a presentable to financiers and other stakeholders business plan (Brinckmann, Grichnik & Kapsa, 2010). The external equity *funding* support available for new ventures can be grouped in three categories (Bertoni & Tykvová, 2012): Venture Capital (VC), Angel Capital (AC) and Crowd Funding (CF). There is consensus in the literature that VC, held in and canalized to entrepreneurs through a particular to its end structure or institution, is the most appropriate way of funding new ventures as its combines both picking and building winning start-ups (Croce, Marti & Murtini, 2013). Business angels differentiate from venture capitalists in that they act as individuals investing own money. Crowdfunding, finally, is the process by which an entrepreneur raises external financing from a large group of individuals, generally by using

on-line social networks, with each providing a very small amount (Belleflamme, Lambert, & Schwienbacher, 2014). Support for *execution* intervenes after any process of conception and often in parallel with activities to ensure some kind of external funding. The aim is to provide a supportive environment to business plans and venture projects that have already taken some initial steps in terms of disposing of a completed business plan, prototypes and preliminary customer feedback from experiments conducted in test markets. Support for execution must take into account the heterogeneity of entrepreneurs, teams and ventures, thus providing flexible structures and processes (Lerner, 2010) ranging from technical assistance to accompanying immersion into entrepreneurship communities and networks (Scillitoe & Chakrabarti, 2010).

Support for *transformation towards innovation* concerns incumbent companies and is essentially focused on SMEs. There is a long tradition of regional, national and supranational innovation policy interventions and support efforts for the development of regional and/or sectoral innovation systems, paralleled in academic research which extensively analyzes these phenomena (Martin, 2012; Radosevic & Yoruk, 2013). Innovation support initiatives for SMEs rest on the assumption that there are size-related characteristics determining the needs and nature of support, including limited financial, human and management resources, a smaller knowledge base, limited bargaining power in SMEs' relations with the environment, as well as cultural particularities (North, Smallbone & Vickers, 2001).

How Should Support be Provided?

Business Plan- or Business Idea Competitions is what most frequently is found as support mechanisms for venture *conception*. The business plan will be the outcome of an iterative design and planning process where there is dynamic interaction between planning and learning in view

of evaluating options and making decisions (Chwolka & Raith, 2012). Business schools play an important, but sometimes contested role in supporting venture conception (Aulet, 2013).

The main obstacle to attracting *funding* is lack of knowledge about how to get the attention from investors (Basu, Phelps & Kotha, 2011), whether these are venture capitalists or business angels (crowd funding being a different game). The reasons for this are many. New venturers and investors speak different languages, entrepreneurs get carried away by their game-changing product or service seeing the financial aspects of their business as being of secondary importance, and, for many, there is simply lack of knowledge in financial matters and lack of know-how about how to present, communicate and bring forth those key aspects that investors look for in their interactions with startups (Petkova, Rindova & Gupta, 2013). Hence, the financial and financing aspects of new ventures should be omnipresent in any support initiatives accompanying both conception and execution. In conception, focus should be on financial knowledge and the language of investors; learning how to make financial calculations and predictions. In execution support, financiers should be integrated in networking activities and hands-on technical support as well. When it comes to crowd funding, the legal issues in local markets must be made clear and venturers informed about different forms of crowd funding, e.g., pre-ordering and profit-sharing (Belleflamme et al, 2014) and platforms tailored to crowd funding such as Kickstarter.

When it comes to supporting the *execution* of new business plans and business models, this is what incubator initiatives are designed for. The incubation process normally includes both business and technical assistance through networking and counseling interactions between the entrepreneur, the incubator management and the incubator's wider recourse base (Scillitoe & Chakrabarti, 2010). The result of an incubation process, is a revenue-generating business with great growth potential and that can stand on its own before exiting the incubator.

Concerning *innovation support* for SMEs, the volume of policy interventions and public money spent unfortunately often remain unmatched in the actual innovation results in terms of innovations launched in the markets and their impact on economic growth or intellectual value added (Fischer, Polt & Vonortas, 2009). Programs tend to fail if they are over-engineered, add restrictions on several dimensions, present goals diverging from those of the businesses targeted or fail to address the pragmatic needs of companies (Lerner, 2010; Massa & Testa, 2008). Hence, initiatives must recognize and address these shortcomings.

From the above it seems clear that the field of entrepreneurship and innovation support is in burgeoning development. Situated at the crossroads of economic development, academic research, and business/management practice, it involves tight connections and dynamic interactions among a wide range of different players. Hence, besides its dimension of practical application –hands-on interventions by public and/or private players in conception, funding, execution and transformation of new ventures and innovation projects- it has strong systems and societal dimensions, and is also heavily rooted in and dependent on the context where entrepreneurs and innovators reside and act.

The Emerging Entrepreneurship and Innovation Support in Greece

As counter-forces to the crisis, a plethora of initiatives are being launched, aiming at promoting and supporting innovation and entrepreneurship as motors for growth and job creation opening a pathway for Greece to regain growth. A common characteristic of most initiatives is that they involve both public and private players, in some cases also NGOs, or other institutional organizations. Although Greece obviously fights from a very unfavorable position when it comes to developing innovation and launching entrepreneurial ventures, Endeavor Greece (2015) emphasize that the current boom in startups is a good beginning.

A large number of institutions supporting innovation and entrepreneurship have been set up over the last years in Greece. Endeavor has identified as many as of 55 in 2013, out of which 95% were non-existing in 2010. They group these along two dimensions in a matrix model:

- Four categories of *support activities* (vertical axis), namely Finance, Network, Knowledge and Inspiration, and
- Five *phases of start-up / firm development* (horizontal axis), namely Idea, Product, Early Revenue, Scale-up and Mature.

These dimensions correspond closely to the intervention areas of conception, funding, execution and transformation (Knockaert et al, 2013; Short, et al, 2010) identified above and can thus constitute a relevant basic structure where both specific *venture- and/ or innovation projects*, and specific *support initiatives* can be positioned. The Greek support institutions, which have been established over the last years, demonstrate the growing power of entrepreneurship in Greece. Despite the lack of many elements, in order to be a proper ecosystem, this entrepreneurial landscape is a substantial start – like '1.0' version. Endeavor 2013 summarizes the weaknesses as follows: Bottlenecks can be observed in specific areas, like incubators/accelerators, and venture/seed capital; Excessive focus on early stage ICT and lack of continuity between events and among players; A clear 'supply and demand' imbalance, meaning that the supporting organizations tend to have more or other kinds of capacity or resources than what start-up ventures seek and demand; There are gaps in sectors like tourism, energy, food, and in growth stages, e.g., support for more mature companies.

Addressing these gaps will bring the entrepreneurial landscape closer to a more effective and complete version '2.0', which is where the present research aims to contribute. In particular the problem of fragmentation will be addressed trying to understand why it happens, what drives the

establishment of new players/initiatives and why new are created rather than existing ones growing and consolidating? Moreover, support should focus on Greece's comparative strengths in tourism, food, infrastructure and ICT, the latter emerging as a sector of potential growth with higher knowledge intensity compared to the other.

Summing up, Greece has always presented strong tendency towards entrepreneurship. However, there has never been a consistent public policy and consistent public support to strengthen and support this. Moreover, entrepreneurs and the state have often perceived themselves, and been perceived in general, as pursuing antagonistic interest. During the persistent crisis of the recent years, companies have met unprecedented difficulties and unemployment has exploded. Entrepreneurship of a new to the Greek context kind has indeed emerged as the counterbalance for business opportunities and also as an enabler for growth restoration and job creation. Nonetheless, it is clear that a large scale entrepreneurial increase has not yet fulfilled. Nor a sufficient 'ecosystem' has been created, in order to support entrepreneurship.

Next, we review the literature of primary relevance for understanding how innovation comes about and develops through entrepreneurial activity, and how these processes can be enhanced from support activities. Hence, we review, in order of appearance, coevolution theory, innovation systems literature, open innovation, innovation and entrepreneurship policy, and public-private partnerships literature.

RELEVANT LITERATURE

Based on a systematic review of literature published since the early 1980s, consolidating the state of academic research on innovation, Crossan & Apaydin, (2010) define innovation as follows: "Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets;

development of new methods of production; and establishment of new management systems. It is both a process and an outcome." (Crossan & Apaydin, 2010: 1155). This definition confirms the tight connections and dynamic interactions among a wide range of factors and players that characterize innovation as a phenomenon, and that gives it strong systems and societal dimensions, as suggested in our introduction. A particularly significant observation in the above definition is that innovation "is both a process and an outcome". The present study is primarily concerned by innovation as a process.

Innovation and Entrepreneurship are closely linked, because, on the one hand, much of entrepreneurial activity involves innovation, and, on the other, entrepreneurs are critical to the innovation process (Lindholm Dahlstrand & Stevenson, 2010) acting as 'between-takers' in the laborious process of transforming opportunities into marketable offerings. Moreover, the turbulence produced by a high rate of business entry and exit activity, i.e., entrepreneurial activity, is in itself associated with higher levels of innovation in an economy. Hence, it makes sense to aim at convergence between innovation and entrepreneurship support activities, particularly when their goal is to foster new high-growth innovative firms (Atkeson & Burstein, 2011). The present research and the literature review that follows aim at pursuing along this still quite narrow integration path.

Coevolution

The term coevolution refers to the *simultaneous evolution of entities and their environments*, whether these entities are organisms or organizations (Baum & Singh, 1994). Coevolution is an established research framework in the biological and evolutionary sciences, and a newer entrant to organization studies, where, however, its proponents emphasize its potential to transform the field (Lewin & Volberda, 2003). In organizational terms, coevolution involves *identifiable elements of a self-organizing system that change permanently through interaction among its*

entities and recombining of its resources (Langton, 1992). Many researchers have been drawn to the idea of coevolution because of the realization that different levels of social organization—groups, subunits, organizations, industries, institutions, and economies—often change together (McKelvey, 1997; Murmann, 2003).

As a part of evolutionary theory, coevolution has been developed to provide insight into how and why two or more populations can causally influence each other's evolution (Murmann, 2003, Norgaard, 1994). Murmann (2012) explains that in order to prove coevolution, one must be able to demonstrate that reciprocal (bidirectional) causal mechanisms between the populations influence change in at least one of the three evolutionary processes (i.e., variation, selection and retention).

Lewin & Volberda (2003) state that firms' strategic and organizational adaptations coevolve with changes in the environment (competitive dynamics, technological, and institutional changes) and organization population and forms, and that new organizational forms can mutate and emerge from the existing population of organization. They develop a model of coevolution of organizations and their environment, adding to the performance and conduct of the firm and the competitive dynamics of industries, the *institutional and extra-institutional environments* as sources of constraints and opportunities of firm and industry adaptation, and the *mutual adaptation* of firm, industry, and institutional environments. The institutional environment can explain potential differences and outcomes related to country-specific variations, in, e.g., regulations, rule-making, capital markets, educational system, employment relations and governance structure. The extra-institutional environment can explain potential influences of macroeconomic, technological, social, demographic and global political effects. Hence, the model of Lewin et al (1999) attempts to integrate the interplay between the adaptation of

individual organizations, their competitive dynamics, and the dynamics of the institutional systems within which firms and industries are embedded.

Coevolution spans all levels of analysis and has been applied in the evolution of industries (Malerba, 2005), new organizations (Inkpen & Currall, 2004), new organizational forms (Lewin, et al, 1999), and new forms of adaptation (Lewin & Volberda, 2003). The fundamental criteria of coevolution (Futuyama & Slatkin, 1983) are: *Specificity*, that the evolution of one entity is due to the evolution of other and that evolution occurs between entities belonging to different populations; *Reciprocity*, that both entities coevolve through interdependence; and *Simultaneity*, that both entities coevolve concurrently.

All changes in all interacting organizations result from direct and indirect feedback. An organization that stimulates the evolution of another organization is, in turn, itself responsive to that evolution (Baum and Singh, 1994). Porter (2006) further emphasizes that what distinguishes coevolution from intended or induced strategy is that it is adaptive and emergent, unplanned and unpredictable, and unfolds at the edge of chaos. Coevolutionary theory is a bridge between the *prescient* adaptationist and *ex-post* selectionist perspectives of organizational change, countering the misperception that evolutionary theory in management assumes that human agents act randomly, without intentions, in the process of emergence of new variations (Murmman, 2012).

As an underpinning theoretical model for the present research, coevolution emphasizes the dynamic interactions between a wide range of players where inclusion rather than exclusion should be favored, at least at the initial stage of the research. Specificity, reciprocity and simultaneity are characteristics that provide a framework for analysing the functioning and development of an entrepreneurship ecosystem. Moreover, Levin's et al (1999) model of firm, industry, institutional and extra-institutional factors provides a basic framework for classifying and analyzing players in an entrepreneurship ecosystem. When doing so, it can be superposed on

the structure of phases (Idea, Product, Early Revenue, Scale-up and Mature) and support activities (Finance, Network, Knowledge and Inspiration) identified earlier. Finally, studies of phenomena that relate to and result from coevolution require a multilevel, multitheory and multimethod approach to research (Porter, 2006).

Innovation Systems

In general terms, a system may be defined as “a set or arrangement of things so related or connected as to form a unity or organic whole” (Webster’s). More specifically, systems are made up of: *Components* – the operating parts of the system (purposefully created *organizations* and emerging *institutions* - sets of common habits, routines, established practices, rules, or laws that regulate the relations and interactions between organizations); *Relationships* – the links between the components; and *Attributes* - the properties of the components and the relationships between them.

Lundvall (1992: 34) gives both a narrow and a broader definition of a *system of innovation*. The narrow definition includes “Organizations and institutions involved in searching and exploring such as R&D departments, technological institutes and universities”. The broader definition include “all parts and aspects of the economic structure and the institutional set-up affecting learning as well as searching and exploring - the production system, the marketing system and the system of finance present themselves as subsystems in which learning takes place”. Synthesizing these and other early innovation system definitions (e.g., Freeman, 1987), they all refer to the components and somewhat to the attributes of the system, leaving quite imprecise any specification of the relationships. Moreover, the *function* or purpose of an IS remain somewhat blurred. The definition of OECD (1997) narrows these voids by emphasizing that the interactions among the units in an innovation system can be technical, commercial, legal, social, and/or financial with the goal of the interactions being the development, financing, protection or

regulation of new science and technology. Carlsson, Jacobsson., Holmén & Rickne (2002) also emphasize the function of an innovation system, beyond a policy buzzword, namely to generate, diffuse, and utilize knowledge and technology for innovation purposes. Based on Oltander and Perez Vico (2005), Bergek, Jacobsson, Carlsson, Lindmark, & Rickne (2008) propose three *structural components* -Actors, Networks and Institutions- and seven *functions* of innovation systems, namely Knowledge Development, Resource mobilization, Market formation, Influence on the direction of search, Legitimation, Entrepreneurial experimentation, and Development of external economies.

Relating the innovation system concept to coevolution, there are obvious parallels, although the IS literature emphasizes less the core phenomena of coevolution, which is evolution, i.e., development through variation, selection and retention. Lundvall (2005) attributes this to the fact that knowledge and learning have mostly been treated as black box concepts in the innovation systems literature, while they are the core processes that tie the system together and nurture its dynamics. He argues that IS research must develop into "an analysis of how knowledge evolves through processes of learning and innovation" (Lundvall, 2005: 11). This will strengthen the approach to innovation systems as coevolutionary systems that create diversity, select and retain players, relationships and attributes in the interplay between production structure, technology and institutions.

Summing up, the innovation systems literature adds important components to the agenda of the present research:

- Basic systems thinking must be considered; What are the components, what are the relationships and what are the attributes of these components and relationships in the spatial and/or functional area where the initiatives are implemented?

- The black box of components and relationships should be opened up; What are the most important issues in terms of knowledge, technology, actors, networks and institutions that potentially will enhance or risk hampering innovation in the spatial and/or functional area in question? There must be a *fit* between support initiatives and the reality of the system in this area. The notion of fit is partly static in that it concerns the definition of support initiatives based on a specific situational and chronological context at hand (as is). It is also anticipative in that it aims at creating the impetus and conditions for envisioned new system constituents or transformation of existing ones which will materialize through that initiative (to become).
- Components and relationships are interdependent as they coevolve. Knowledge and reciprocal learning processes are the drivers in this process of coevolution. Coevolution focuses on *agency* because it "considers organizations, their populations, and their environments as the interdependent outcome of managerial actions, institutional influences, and extra-institutional changes" (Lewin et al, 1999: 535). Hence, the actions and behaviors of some players will have effects on the actions and behaviors of other. Therefore, *alignment* of support initiatives with the components and relationships of the system is crucial in order to potentially enhance innovation in the spatial and/or functional area in question. Compared to the partially static partially anticipative notion of fit, the notion of alignment is dynamic in that it refers to how the support initiative enables the supported entity to coevolve with its environment and actually reach the anticipated outcome or transformation.
- The functions that the Innovation System provide should be identified and assessed, i.e., functions like Knowledge Development, Resource mobilization, Market formation, Influence on the direction of search, Legitimation, Entrepreneurial experimentation, and Development of external economies (Bergek et al, 2008).

Innovations systems can be approached in a variety of ways; they can be national, regional, sectoral, or technological. Hence, there can be both a spatial and a functional dimension to innovation systems. The term 'National Systems of Innovation' (NIS) implies a focus on the nation state as unit of analysis for innovation studies and thus provides some control of both organizations (e.g., educational, public support, specific firms...) and institutional variables such as practices, rules and laws, even some cultural traits (Martin, 2012). As such it lays a direct ground for policy-making that can influence and to some extent even control these factors. In an increasingly globalized economy, however, innovation rarely contains within national boundaries (e.g., Herstad, Wiik-Aslesen & Ebersberger, 2014). In this reality the driving force of the NIS approach, national policy-making (Lundvall, 2005), is complemented or replaced by policies concerning regions, sectors or technologies (e.g., European Commission, 2010).

From the theoretical grounding in coevolution, emphasizing interdependent and simultaneous evolution of entities, and the innovation systems literature, attempting to explain how specific entities engage in relationships and knowledge networks to materialize innovation, the perhaps most central characteristic of innovation could be defined as *inter-organizational interaction*. In this context, *Open Innovation* has emerged and established itself as the dominating analysis lens in innovation studies in the last decade, also at the firm level. Hence, it is essential to review also this stream of literature as a background to the present study.

Open Innovation

Coined by University of California Professor Henry Chesbrough, Open Innovation (OI) is a 21st century paradigm for innovation that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they engage in innovation activities and as these unfold along a standardized innovation process, e.g., exhibiting sequenced stages of idea-concept-development-product launch. The logic of OI is based on the idea of a landscape of

abundant knowledge, which must be used reciprocally in order to provide value to the companies and organizations that create it (Chesbrough, 2003). The knowledge that a company uncovers in its own research should not be restricted only to its internal pathways to market. Similarly, its internal pathways to market should not be restricted only to using the company's internal knowledge (Chesbrough, 2006).

Chesbrough defines open innovation as: “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology”. (Chesbrough, 2006: 1). OI can encompass a wide range of forms and degrees of openness in the innovation process (Laursen & Salter, 2006). Combining internal and external technology bases, companies can engage in *outbound* innovation by either revealing, spinning off, or selling/licensing ideas, knowledge or technologies, in *inbound* innovation by either sourcing or acquiring such innovation assets from outside (Dahlander & Gann, 2010), or in both, by *coupling* external knowledge sources and outbound commercialization activities (Chesbrough & Bogers, 2014). In doing so, they position on a continuum from mostly closed to mostly open, and engage in open processes of different breadth and depth depending on the innovation challenge at hand (Dahlander & Gann, 2010; Laursen & Salter, 2006). Innovation outputs can reach the focal firms' current markets, new markets or other firms' markets (Chesbrough, 2006). A firm embracing open innovation would thus use a broad range of sources for its R&D and innovation activities, including customers, competitors/rival, academics, and firms in unrelated industries, while simultaneously using creative methods to exploit its resulting IP (Chesbrough, 2003).

From this overview of the concept of Open Innovation it seems clear that it affords the interconnected evolution of entities that is central to the coevolution theory, while it also complements the relationship-building and networking activities of the Innovation Systems literature with its emphasis on concrete firm strategies, tactics and actions to materialize these.

Open Innovation is starting to have an increasing impact on *innovation policy*, as national and regional governments are required to design policy instruments that are in line with new challenges imposed by OI. Chesbrough and Vanhaverbreke (2011), in their research report entitled "Open Innovation and Public Policy in Europe" state: "If Europe wants to keep or improve its competitive position in the globalising knowledge economy in the next decade, then public policy has to develop some basic guidelines that are in line with the imperative of open innovation" (Chesbrough and Vanhaverbreke, 2011: 7).

Europe, recognizing the importance of open innovation, takes initiatives in order to promote collaborative innovation and entrepreneurship to create jobs and promote the sustainable economic and societal growth. In this sense, a Conference was held in Dublin by the EU Open Innovation Strategy and Policy Group (OISPG) and a white paper was released in 2013, entitled 'Open Innovation 2.0 – A New Paradigm'. It outlines the key emerging characteristics and practices of Open Innovation 2.0 (OI2) and how it can practically help address European challenges. Director General of DG CONNECT Robert Madelin, welcoming the publication of the OI2 paper and the Dublin Innovation Declaration, said "This is a new approach to driving forward innovation in Europe; and the ideas themselves have been created in a more open and participative way than is usual, delivering in direct consequence better ideas, faster and at lower cost" (<https://ec.europa.eu/digital-agenda/en/news/open-innovation-20-%E2%80%93-new-paradigm-and-foundation-sustainable-europe>).

Having reviewed theories and approaches that aim at describing and explaining how organizational entities act and interact to materialize innovation and new economic development, we turn to the subject of innovation and entrepreneurship policies per se.

Innovation and Entrepreneurship Policy

The public policy field in innovation studies is vast, coincides with the innovation systems approach, and has a history that goes back to research policy and technology policy, notions coined in the 1960s and 1970s respectively (Fagerberg, 2015). It is coupled to the constant evolution of innovation dynamics, as illustrated, for example, by the recent rapid development of policy guidelines related to Open Innovation, referred above. Policy-driven public investment in science and basic research plays an important role in developing new technologies that become seedlings for innovation and entrepreneurship, as illustrated by the many high-tech commercial successes and fundamental innovations with deep and positive social impacts which had their roots in public research (OECD, 2007).

Fagerberg (2015: 3) argues that a broad definition of what is meant by innovation policy; "all policies that have an impact on innovation", is the most appropriate. This reflects an understanding of innovation as "the entire process from the emergence of new ideas to their economic exploitation", because what interests policy-makers is how innovation becomes catalyst for economic growth and development of regions, nations and the society as a whole. This definition also reflects the broader aim of supporting innovation with public money; that besides being a vehicle of economic prosperity, innovation also contributes to socially inclusive progress by reducing unemployment, poverty and social marginalization, particularly among disadvantaged and vulnerable groups (de Geus, 2011).

A review of literature and innovation policy white papers that provide recommendations for supporting innovation by entrepreneurial firms, summarized in Table 1, lead to the identification

of five main categories of policies Atkeson & Burstein (2011), Fayolle (2007), Laredo & Mustard (2001), OECD (2010), Sloan (2001), World Bank Group (2013): Funding; Education and Human Capital; Cooperation and Networking; Institutional Conditions; and Government Action. These categories also closely reflect the Open Innovation policy recommendations proposed by Chesbrough & Vanhaverbreke (2011).

References Policy Categories	World Bank Group, 2013	OECD, 2010	Atkeson & Burstein, 2011; Fayolle, 2007; Laredo & Mustard, 2001; Sloan, 2001
Funding		Mobilise private funding for innovation.	Government funding for R&D. Direct and indirect subsidies. Tax credits and other tax benefits, such as deductibility of research expenses.
Education & Human Capital		Empowering people to innovate. Creating and applying knowledge, with an effective public research system.	Access to qualified workforce. Support development of entrepreneurship in the education system in order to develop future entrepreneurs having the necessary skills that are critical for the survival of their business.
Cooperation & Networking	Strengthen linkages between public R&D and private sector users of technology and knowledge.	Encourage consumers to contribute to innovation Strengthening the framework for innovation Foster efficient knowledge flows, networks and markets	
Institutional Conditions including climate and culture for innovation	Build domestic science, technology, and innovation capabilities to make effective use of global knowledge.	Foster open markets. Foster markets for innovative outputs through appropriate regulation and institutional integration. Motivate enterprises to access new and/or foreign markets	Labor relations.
Government Action	Support public investment in R&D that focuses on improving efficiency and relevance to end users as well as on strengthening the use of research results in public policy decisions. Stimulate and support enterprises with high potential of jobs creation, export and high growth.	Invest in a knowledge-supporting infrastructure.	Encouraging managerial and administrative decentralization. Shortening distance between science and technology policymakers & the beneficiaries of their policies. Improving the governance and measurement of policies for innovation. Strongly link policies and results. Smart regulations, standards, pricing, consumer education, taxation and public procurement

Table 1. Policy recommendations that encourage innovation by entrepreneurial firms.

Innovation policy, like entrepreneurship policy, has different meanings to different governments, so the policy instruments and measures encompassed in policy implementation also vary widely from one government to another (Lindholm Dahlstrand and Stevenson, 2010). The World Bank Group (2013) clarifies some of these differences. Upper-middle-income countries, such as Brazil, Chile and China give high priority to innovation to reinforce existing industry in their development plans, while lower-middle-income countries prioritize innovation and entrepreneurship to diversify from resource-based to knowledge-or innovation-driven development. Developing countries, and those nations seeking to rejuvenate their industrial base by seeking to pursue development strategies that foster growth, must build the capacity to acquire, disseminate, and use technologies to promote innovation and encourage new and existing firms to invest in business opportunities.

Innovation thus can become the means for diversification and exploitation of unique advantages that will reinstall national competitiveness. There is a consensus in the literature that Governments need to go beyond the provision of narrow push measures that target the first occurrence of a new product (Fagerberg, 2015) to address policy and market failures that dampen entrepreneurial activity and limit the scope for innovative small firms to grow (Chetty, 2014).

To sum up, although innovation is context-dependent (Kelley, Singer & Herrington. 2011), being perceived differently in different economies and influenced heavily by educational process and cultural norms, it can be enhanced by deliberate supporting policies (Dodescu, 2012). The main challenges when developing and implementing such policies are (Atkeson & Burstein, 2011; UNECE, 2012):

1. To channel innovation support effectively; policymakers need to know which policies are most successful in spurring what type of innovation in what kind of companies (Large, SMEs. Start-ups...),

2. To apprehend to what extent specific firm-level innovation induced by these policies truly generate broader economic growth and positive social impact given policy measures' fiscal cost to taxpayers,
3. To comprehend when and to what extent 'technology push' vs. 'demand based' policy instruments are most appropriate. Government grants, loans and other financial incentives are of the 'technology push' kind, while 'demand-based' instruments are expected to encourage innovation through public procurement policies, development of transparent rules, norms and standards, and implementation of market development measures.

Having identified main policy dimensions and actions, and having synthesized main policy challenges, a major problem remains in that entrepreneurship policy and innovation policy areas are rarely integrated (Lindholm Dahlstrand & Stevenson, 2010). What is more, much of the academic research related to entrepreneurship and innovation is pursued by different scholars. As a result, policies are, more often than not, designed and implemented by different actors including different ministries within national governments (Atkeson & Burstein, 2011). Hence, there is little guidance on how to develop effective interventions that can help policy-makers select, design and implement integrated programs to support innovation and entrepreneurship in a holistic manner (World Bank Group, 2013).

The comparative framework of innovation and entrepreneurship policy measures proposed by Lindholm Dahlstrand & Stevenson (2010) is a promising tentative to integration. Identifying a context of three phases –initiation, anchoring and development- for innovation and entrepreneurship activities respectively, they propose five policy actions that with some adaptation can be common to both innovation and entrepreneurship policy: Create dynamic start-up market for entries and exits; Stimulate more entrepreneurial activity; Stimulate climate and

culture for innovation and entrepreneurship; Stimulate development and commercialization of technology; and Increase R&D intensity.

Policy studies should recognize the relationship between innovation, underlying research, and entrepreneurial effort aimed at commercializing the results of R&D. Innovation and Entrepreneurship are closely linked, because, on the one hand, much of entrepreneurial activity involves innovation, and, on the other, entrepreneurs are critical to the innovation process (Lindholm Dahlstrand & Stevenson, 2010). In addition they argue that the turbulence produced by a high rate of business entry and exit activity, i.e., entrepreneurial activity, is in itself associated with higher levels of innovation in an economy. Hence, it makes all sense to make innovation and entrepreneurship policies converge, particularly when the policy goal is to foster new high-growth innovative firms (Atkeson & Burstein, 2011). The innovation and entrepreneurship policy literature reviewed emphasizes the role of government and public actors in the conception, funding, execution and transformation of new ventures and innovation projects. A major approach to public support at the crossroads of public and private actor interaction is Public-Private Partnerships (PPPs). The next and final section of the literature review investigates how the PPP literature can contribute to the present research.

Public-Private Partnerships

A large and rapidly growing academic literature on the subject matter of Public-Private Partnerships (PPPs) has been developed since the late 1990s due to their increasing popularity in many both developed and developing countries. PPPs set up for economic development purposes have been described as the collaboration paradigm of the 21st century (Austin, 2000). Despite its popularity, a review of the academic literature illustrates that the concept of ‘PPPs’ is an ambiguous term with a number of differing meanings and usages in various contexts (c.f., e.g., Wettenhall, 2003; Hodge & Greve, 2012).

An increasing number of countries are including a definition of PPPs in their legislation, each tailoring the definition to their institutional and legal particularities (World Bank, 2009). For example, in the Canadian context a PPP is defined as a “cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards” (<http://www.pppcouncil.ca/resources/about-ppp/definitions.html>). The European Commission ‘Guidelines for successful PPPs’ gives the following definition: "Public–Private Partnerships is a form of collaboration between public and private sectors in order to services’ realization which delivered only by the public sector in a traditional way" (European Commission, 2003a). A common base in the various definitions is that the public sector plays a framing and guiding role, while the private is the executive actor. For the public sector the most important issue is satisfaction of social targets, e.g., preservation or increase of social trust. For the private sector the main interest is the financial profit.

A useful synthesis definition is provided by (Van Ham & Koppenjan, 2001: 598): "[PPPs are a] cooperation of some sort of durability between public and private actors in which they jointly develop products and services and share risks, costs, and resources which are connected with these". These "cooperative institutional arrangements between public and private sector actors" (Hodge & Greve, 2007: 545) can be implemented in a wide range of constellations and areas (Hodge & Greve, 2012), ranging from public utility services by private operators (e.g., roads, harbours or airports) to local efforts of enhancing knowledge development and growth (e.g., an incubator run by a public university, or a technology park providing publicly funded incentives for innovative SMEs). PPPs have emerged as possible 'third way' solutions to market failures that have been observed in other approaches including vertical public integration, contracting-out of public services, and full privatization (Hodge & Greve, 2007; Rui Silva & Rodriguez, 2005).

In synthesis, PPPs are an arrangement that brings public and private sectors together in long-term partnership for mutual benefit (SO, 2000). PPPs are contractual agreements between a public agency or authority and a private sector entity that allow for greater private participation in the delivery of public services, or in developing an environment that improves the quality of life for the general public, and where the partners share risk, reward, and responsibility for a shared investment (Akkawi, 2010).

PPPs and Innovation

Public-private partnerships can be decisive instruments for innovation if they are tailored to enhance competitiveness and economic growth based on innovation (Witters, Marom & Steinert, 2012). They can also help governments become more inventive by creating a space outside their structure that allows innovation to flourish. PPPs for innovation can be considered a learning process among various public and private agents (Douthwaite, 2002) that can be catalyzed through the building of specific partnerships—for example, by assembling innovative talents across research and private-sector organizations. PPPs can promote coordination between public and private partners, support and sustain networks for innovation, and integrate policy with the real needs of private actors on local markets (Rui Silva & Rodriguez, 2005). They can fill important gaps in the science and innovation systems and increase the leverage of public support to business R&D through cost and risk sharing (OECD, 2007). In particular, they can help canalizing research and innovation efforts to key challenges in the public sphere, including delivery of health care, social services, environmental protection, and sustainable transport. Participation by the productive sector makes the developed solutions more relevant and practical, and, as a result, the probability of the innovation being adopted increases (Hartwich, Gottret, Babu & Tola, 2007).

PPPs are also subject to policy interventions. Then President of the European Commission, José Manuel Barroso, stated in July 2014 at a DG Research and Innovation meeting that "*Only if the best brains from academia, industry, SMEs, research institutes and other organizations come together can we successfully tackle the huge challenges that we are facing. This is what public-private partnerships are about, the joining of forces to make the lives of Europeans better, create jobs and boost our competitiveness*".

In conclusion to the review of Public-Private Partnerships, a number of characteristics and approaches found in PPP arrangements are of interest to our problematic, as they can inform and inspire both governance structures and execution processes of entrepreneurship and innovation support initiatives:

- Provision of a context for *risk sharing* (Hodge & Greve, 2007) for the start-up or innovative SME where the public partner would provide either funding for some kind of indirect support of both conception and execution of new ventures, or direct financial support for transformation of established firms. The risk sharing factor reflects a policy support motivated by the growth-enhancing effects of entrepreneurship and innovation.
- Provision of *robust public markets* for young firms (Lerner, 2010) where they can find initial or partial set-off for their emerging offering. This can materialize easier if there are explicit public sector goals of introducing innovative products, services or business models in the public sector (Hodge & Greve, 2007). This factor represents a market mechanism where the public organization will have a direct commercial involvement as part of the support and simultaneously ripe potential gains.
- PPPs involve *long-term commitment* (Van Ham & Koppenjan, 2001), which is a crucial ingredient for scalable start-ups and transforming SMEs in order for the support initiative to

bear fruits in the shape of viable new or renewed businesses. This factor refers to the behavior adopted by the public organization towards the beneficiaries of support.

PPPs in Greece

Greece has long been searching for new instruments, in order to sufficiently respond to the country's needs for public infrastructure and services. PPPs were introduced in the early 2000s in the form of concession agreements, which, at the time, have been said to form a kind of legal paradox (Trova & Koutras, 2001). Greece entered a more dynamic period of PPP development when a new law was introduced in 2005 that opened the market to this new type of public procurement (Kitsos, 2014). Hence, there is a basic platform for PPPs in Greece, although their application in projects related to innovation and entrepreneurship activities has not yet been formalized, let alone analyzed or studied. As the PPP approach can provide a complementary perspective on entrepreneurship and innovation support studies, particularly useful for conceiving risk sharing, comprehending the appropriate conditions of public markets, and emphasizing the need for long-term commitment to venture and innovation development, the PPP perspective seems highly relevant to include in the research being proposed.

Having reviewed the theories and literature streams of primary importance to the present research, the following section summarizes the reviewed theories and their elements into a conceptual model to guide the research.

CONCEPTUAL MODEL

A fundamental ambition of the research is to arrive at integrating the innovation and entrepreneurship support research streams as both are directly linked to economic and social development, and the one needs and reinforces the other. Such an inclusive approach is unanimously called upon from practitioners, academics, and policy-makers alike (Brem, 2011; Curley & Salmelin, 2013; Feld, 2012), but little integration work has still been presented, one notable exception being Radosevic & Yoruk (2013) who take stock of the entrepreneurial propensity of innovation systems. Especially, academic research is lagging behind when it comes to forging links between innovation and entrepreneurship, both at the micro and macro levels of studies (Radosevic & Yoruk, 2013). Illustratively, in spite of the abundant research about innovation policy, grounded in the innovation systems literature, researches setting out from an entrepreneurship scholarship stream claim that research in and around *entrepreneurial* eco systems is still in its infancy, especially when it comes to investigating their quality as a societal force "put to work in the design and achievement of socioeconomic ends" (Sarasvathy & Venkataraman, 2011: 113).

In view of the above, and leaning on the review of the most related and relevant literature streams, we propose that in order to build new and relevant knowledge about the context, processes, dynamics and outcomes of emerging innovation and entrepreneurial ecosystems, three issues need to be addressed and embodied in the present research:

- First, if the *objective* and *underlying rational* of programs and initiatives that intend to foster, canalize and support innovation and entrepreneurship is to *achieve economic development*, no context could be more relevant than that of a '*deep crisis*', which unfortunately has characterized Greece since 2010. Responding to the Academy of Management call for "selecting a topic [that] confronts or contributes to a grand challenge" (Colquitt & George,

2011: 432), research on entrepreneurship and innovation support should concentrate on those countries, regions and sectors where the need for growth is most urgent (Eisenberg, 2010).

- Second, research should integrate received wisdom from the innovation management and innovation systems fields with the more practically grounded and politically elaborated entrepreneurship and innovation support frameworks and policies. Explicitly or implicitly standing on the theoretical ground of coevolution, the concepts of Innovation Systems (national, regional, sectoral, clusters...), Open Innovation, Innovation and Entrepreneurship Policy, and Public-Private Partnerships can all contribute to a solid underpinning of research investigating entrepreneurship and innovation support initiatives. Research must not fall into the trap of favoring single concepts to the exclusion of others, which to some extent seems to have happened during the current entrepreneurship hype (Aulet, 2013).
- Third, studies should adopt the perspective of the practicing innovator or innovative entrepreneur. After all, the entrepreneurs have to be the leaders of any start-up community (Feld, 2012). Such a perspective 'from the inside' will combat the unsubstantial counting approach where research is more preoccupied by identifying the 'best' place for starting a business, instead of focusing what these 'good places' actually do to attract and support entrepreneur (Business Week, 2013:1).

The literature review developed in the previous section identified four major literature streams relevant for understanding the field of innovation and entrepreneurship support, which are all underpinned, explicitly or implicitly, by the theory of coevolution.

Coevolution theory emphasizes the dynamic interactions between a wide range of players and entities, where maximum inclusion should be favored. Specificity, reciprocity and simultaneity are characteristics that provide a framework for analyzing the functioning and development of an

entrepreneurship ecosystem. The research will identify basic factors in the external environment, both of extra-institutional and institutional nature. In the Greek crisis context, extra-institutional factors such as technological advances, demographics and global interdependence meet institutional factor characterized by uncertainty and even pathogenesis, such as regulatory frameworks, rule making processes, capital markets and employment relationships – all factors identified in the coevolutionary model and that need to be described. In the dimension internal to a firm engaging in innovation and/or entrepreneurial activity, the coevolution model focus the attention to a range of factors essential to the stance adopted vis-à-vis support initiatives, including managerial action, strategic intent, organization adaptation, and mediating factors such as founding conditions and management logic. Finally, the coevolution model includes the characteristics –competitive dynamics- of the industry in which the focal organization competes. When innovators are interviewed, these factors that refer partly to the outside-in conditions and partly to the inside-out individual apprehensions will be researched.

The **innovation systems** literature emphasizes that basic systems thinking should be adopted. This implies that:

1. The research should identify the components, i.e., who are the players and actors, in the spatial and/or subject/topic area engaged by initiatives being implemented.
2. The relationships between the components should be identified. What are the most important issues in terms of network structures and inter-relational ties that potentially will enhance or, conversely, might hamper innovation in the spatial and/or functional area in question?
3. The attributes of the components and relationships should be identified. What are the underlying rationales and objectives that drive and motivate the players and the structures that are built up?
4. The functions that the innovation system provides should be analyzed and assessed.

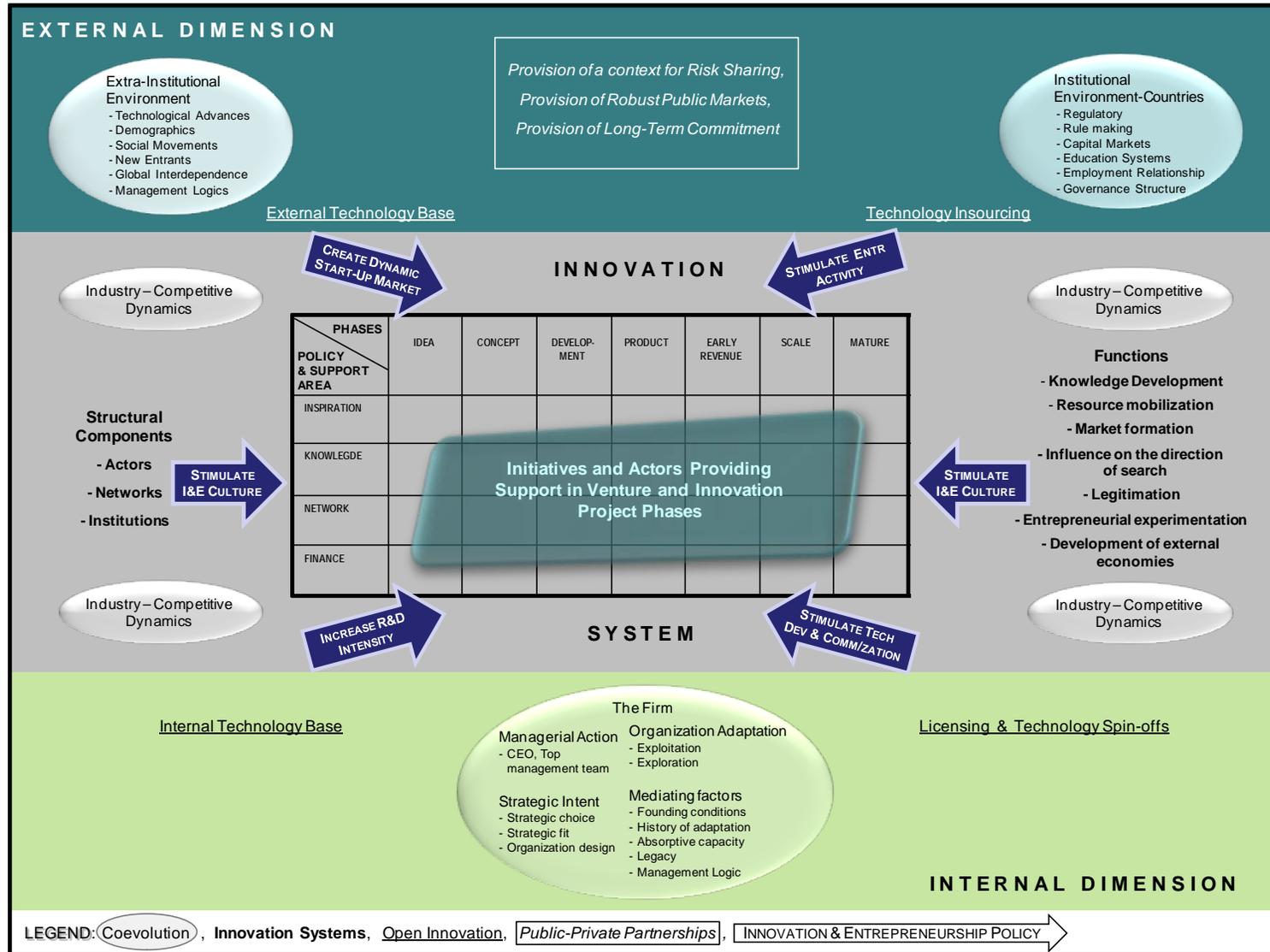
The **open innovation** literature emphasizes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they engage in innovation activities. The implications for the present research lie essentially in understanding to what extent the competitive dynamics in a given industry are more or less open and thus to what extent technology insourcing from external technology bases, and licencing/spin-offs from internal technology bases on the other, are relevant phenomena.

The **innovation and entrepreneurship policy** literature has identified the major fields where activities can be supported in order for innovation and entrepreneurship to become catalyst for economic prosperity and socially inclusive progress, i.e., Funding, Education and Human Capital, Cooperation and Networking, Institutional Conditions, and Government Action. Policy studies should recognize the relationship between innovation, underlying research, and entrepreneurial effort aimed at commercializing the results of R&D. In doing so, policy should contribute to the creation of dynamic start-up markets and stimulate entrepreneurial activity in the external environment of start-ups and innovating firms. It should encourage increased R&D intensity and stimulate development and commercialization of new technologies in the internal strategy and organization of firms, and it should leverage the components and functions of innovation systems to stimulate an innovation and entrepreneurship culture in the spatial context of the focal firms.

The **public-private partnership** literature, finally, emphasizes that PPPs can be decisive instruments for innovation as they can help governments become more inventive by creating a space outside their structure that allows innovation to flourish. They have the potential of assembling innovative talents across research and private-sector organizations, and support the development of solutions that the partners could not have realized on their own. The imperatives for innovation and support initiatives that can be drawn from the PPP literature are provision of a context for *risk sharing*, provision of *robust public markets*, and *long-term commitment*.

Figure 1 integrates these theories and concepts in a research model that will act as a roadmap to the research. The central component is the start-up or the innovative project, represented by the seven phases of Idea, Concept, Development, Product, Early revenue, Scale and Mature, and subject to support initiatives implemented by specific actors and that can provide support in different areas, e.g., Inspiration, Knowledge, Network and/or Finance. Hence, the central component represents a synthesis of the Endeavor framework and the Innovation funnel models.

FIGURE 1. Conceptual Research Model



CONCLUSION: RESEARCHING INNOVATION AND ENTREPRENEURSHIP

SUPPORT IN THE GREEK CRISIS CONTEXT

Integration of the crisis context is of utmost importance for the present research. It constitutes the background influencing all decisions and actions at the levels of individual innovators and entrepreneurs, firms, organizations, institutions, policy makers, government and even the European Union. As such, explicit questions about the influence of the crisis context will be formulated, indicatively related to a) How can innovation and entrepreneurship support counter-balance some of the effects of the crisis? b) What are the most appropriate mechanisms to affront specific crisis-driven problems? c) What value chain elements have suffered most in the crises and how can support initiatives close the gaps that have emerged?

The results of the research will be related to the objective of entrepreneurship and innovation support as a way to mitigate the crisis effects, and to the specific weaknesses identified hitherto, i.e., fragmentation and lack of a clear nation-wide innovation strategy for Greece.

The Greek crisis is systemic (Fotopoulos, 2010) in that it simultaneously concerns all sectors of the economy, the political system, state governance, institutions (banks, education, healthcare...) and the social and even humanitarian conditions of the country's citizens. Triggered by the global credit crisis that bust out with the Lehman Brothers bankruptcy in September 2008, Greece faces a large and stringent economic crisis with huge challenges, such as recession, escalating debt and large unemployment (26.4% in July 2014). The 2014 GDP was approximately at the same level as that of 2006. After five years of economic collapse accompanied by political instability, no less than three parliamentary elections, one referendum, and capital controls since June 28-29 2015 midnight, Greece is still in the longest-lasting economic turmoil of any EU member state since the foundation of the Union and social tensions are high. From 2009 Greek public debt exploded and the total estimated debt end 2014, is as much as 320 billion (New York Times, 2015).

Several studies conclude that the austerity measures have contributed to the crisis, although they have also highlighted the significant role of more fundamental problems of the Greek economy such as the weak production structure, low competitiveness, public service bureaucracy and malfunctioning, slow adoption of technology and innovations, etc. (e.g., Matsaganis & Leventi, 2012; Mitrakos, 2014).

Serious consequences of the crisis have emerged in the real economy, beyond the basic indicators, including inability for private businesses to borrow money for investments, escalating taxation hitting low and middle income classes, discontinuity in tax and legal frameworks, repetitive salary and pension cuts, and massive layoffs in the private sector (Gogos & Kosma, 2014; Matsaganis & Leventi, 2012; Mitrakos, 2014).

Greece, in order to ensure sustainable growth and a positive budget balance, needs to focus on specific sectors with export value that simultaneously create high-quality jobs. It is of equally crucial importance to *create* new industries and to *improve* traditional industrial and service sectors by introducing and exploiting high value-adding technologies and knowledge-based services. This requires creation of a proper business eco system which nurtures, supports and connects high-impact businesses and new ventures (Endeavor Greece, 2013). Although Greece's innovation system achieved a significant catch-up in key indicators such as R&D gross expenditure and R&D employees during the 20 years preceding the crisis (European Commission, 2003b), R&D activity has remained comparatively low in relation to the EU 15 core group and the R&D and innovation landscape shows significant weaknesses. There has indeed been a wide range of public policies and programs implemented through European and national funds to stimulate innovation, but they lack focus on a clear national innovation strategy, which makes the Greek innovation problem systemic (Lioukas, 2009). A systemic innovation problem meeting a systemic crisis is indeed a troublesome mixture. At worst, it can lead to a

downward spiral of negative growth, persisting brain-drain and growing institutional instability. At best, it can produce a schumpeterian creative destruction where new productive combinations will take root, start to develop, grow and hopefully blossom. As a ‘rusty’ middle way it can also possibly produce stagnation – a kind of developmental lock-in where incremental improvements are repetitively disrupted by recessionary factors in the socio-economic system.

The present research aims at developing an integrated approach to the study and understanding of support initiatives and support actors for entrepreneurship and innovation in this crisis context. The unit of analysis will be the innovator, whether he or she is a young start-upper, a more experienced entrepreneur, an innovation practitioner, innovation manager or business owner/CEO. In parallel to the focus on the practitioner, data will be collected also from organizations and programs that are designed and implemented to support innovation and scalable entrepreneurship. With the conceptual framework developed in this paper serving as a roadmap for the research, the methodological approach will be qualitative relying on documentary analysis, interviews and case studies to enable deep understanding of a highly contextualized phenomenon.

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