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**Organisations in Innovation Systems:
Entrepreneurship, Intrapreneurship and Public Policy**

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Working paper no 90, 2016
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ISBN: 978-87-91690-01-3

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Abstract

Organisations are crucial elements in an innovation system. Yet, their role is so ubiquitous that it is difficult to grasp and to examine from the perspective of public policy. Besides, links between the literature at firm and system levels on the one hand, and public policy and governance studies on the other, are still scarce. The purpose of this paper is to define the conceptual background of innovation policy in relation to the role of organisations in general, and entrepreneurship and intrapreneurship in particular. In so doing, this paper aims at making three contributions. Firstly, it distinguishes between different types of organisations in the innovation system, a crucial topic in understanding innovation dynamics and blurring borders. Secondly, it identifies the organisation-related bottlenecks in the innovation system, and examines the policy instruments to solve them. Thirdly, it discusses the limits of public policy and suggests introducing a wider governance approach.

Keywords: entrepreneurship, intrapreneurship, innovation systems, innovation policy, policy instruments

JEL classifications: L26, O38, O31

1. Introduction

This paper follows the evolutionary and resource-based view on business organisation and knowledge from an innovation system perspective. For more than three decades, evolutionary and innovation system perspectives have emphasized not only the importance of the knowledge-base and dynamic competences of firms, but also the role of national institutional configurations in explaining different levels of innovation performance and economic growth across countries. The systemic view brings to the fore the multiple forms of interactions and processes across and within organisations when conducting innovation processes. At the core of all this is the endogenous view that innovation is essentially a socio-economic process embedded in idiosyncratic organisational and institutional contexts. Some of the most valuable literature-review articles have pointed to different perspectives in terms of economic theories of the firm (Pitelis, 2010), different approaches to organisational change (Lam, 2005), and multiple determinants of innovation inside and outside the firm (Crossan and Apaydin, 2010). These are valuable insights into the vast field of business studies at the organisational and firm level. From the point of view of evolutionary and institutional approaches to innovation systems (Teixeira, 2014), firms are the core organisations performing innovation activities, understood here as a process generating newness and a competitive advantage. The capacity of these organisations to successfully conduct those processes internally, to engage with their external context when 'capturing' new opportunities, and to develop the necessary knowledge that lies behind the new products or processes, is an essential feature of the innovation system.

In spite of these rich and fruitful perspectives, links between the literature at firm and innovation system levels on the one hand, and public policy studies on the other, are still scarce. This gap is unfortunate for two reasons. Firstly, because it results in an unfulfilled potential to bring together the analytical endeavours and the findings of both the literature and policy studies in order to provide a theoretical foundation for the role (and limits) of public policy in relation to organisations. Secondly, and more concretely, the praxis of

policy-makers when designing innovation policy seems to lack a structured view about the role of organisations in the innovation system from which to develop specific lines of policy action.

The purpose of this paper is to define a theoretical background for defining the role of innovation policy in relation to organisations. In so doing, it relies on the knowledge-based views of business organisation, on recent advances in the field of public policy, and on the innovation system perspective. The paper addresses issues of conceptual clarity relating to the roles of organisations from an innovation system perspective. The argument is that one of the probable reasons for the gap in the literature is the division of labour between the social sciences focusing on the private sphere, or on the public sphere. Business organisation studies focus on firms and the knowledge-based dynamics created and used in innovation processes, whereas public policy studies focus on (the changing role of) public organisations and their interaction with society more generally. Another probable reason might be the fact that the notion of “organisation” has had many different uses and understandings, often intertwined with other notions like “institution”. These different uses and understandings constitute the richness of organisational studies (March, 2007), but unfortunately they are also a source of constant difficulty for more comprehensive and comparable analytical frameworks. These remarks suggest that part of the problem with these gaps might reside in conceptual issues, which in turn hinders theoretical and policy-oriented developments. With this in mind, the first contribution of this paper is to provide a typology of organisations in the innovation system, which is crucial to the understanding of the diversity of the innovation process, and the blurring borders between these organisations.

Thereafter, the paper draws on the lessons from previous literature on the organisational dimension of innovation, bringing forward previous suggestions on linking entrepreneurship and intrapreneurship studies to innovation systems (Lundvall, 2007) (Radosevic, 2007). Hence, the second contribution of this paper is to refer to Schumpeter and recent entrepreneurship and intrapreneurship literature in order to

identify the general bottlenecks associated with entrepreneurship and intrapreneurship in the innovation system; and to examining the existing sets of policy instruments that aim at addressing these bottlenecks.

Last but not least, following from the recent focus on business and politics interactions (Coen et al., 2010), the paper discusses the role (and limits) of public policy, and suggests the need to introduce a governance approach. The governance approach takes into consideration the wide diversity of organisations and their interactions, and provides new insights into the changing patterns and dynamics in the ecology of organisations that form innovation systems.

2. Organisations in the Innovation System: Concepts and a typology

Innovation is a process that has to do with the knowledge-base and capabilities of organisations, the way in which organisations use and create those resources internally, and how they act externally in relation to the ecology of other organisations, to the market, and to the innovation system. Organisations are defined here as: “formal structures with an explicit purpose and consciously created. They are players or actors.” (Edquist and Jonhson, 1997) p. 47. Organisations are therefore to be distinguished from institutions in the innovation system. Whereas organisations are the actors and agents who actually carry out innovation activities (or indirectly support these activities), institutions are not at all actors or agents. Institutions are the formal or informal “rules of the game” that shape the conditions under which organisations (inter)act. This conceptual distinction is paramount to the understanding of the differences between the behaviour of the units of action (the organisations - as the actors conducting or supporting innovation activities), and the overall framework that shapes the conditions for such action (the institutions – as formal/informal rules of the game).

When stating that innovation is a process conducted by organisations, we refer to the fact that innovation is essentially a social process generated within and across organisations as units of action. Innovation **within organisations** refers to the fact that innovation is a process that is intrinsically related to the way in which organisations structure their processes internally. The social interactions that take place within organisations are crucial to understand the patterns of innovation of a firm. Saying that innovation is a process that takes place **across organisations** is a reference to the growing evidence that innovation does not only happen inside organisations, but also in different forms of inter-firm and inter-organisational interactions, usually as strategic alliances or innovation networks.

INSERT Box 1: Conceptual clarification

Organisation: A formal structure with an explicit purpose and consciously created. In the innovation system, organisations are the actors conducting or supporting innovation activities.

Ecology of organisations: a specific set of organisations.

There are many different types of organisations in an innovation system. Organisations do not only include private firms, but also other innovation-active organisations with different ownership and purpose, like research universities, business consultancy services, venture capital firms, standardization bodies, governmental regulatory agencies, etc. This large number of organisations is somehow bewildering and difficult to grasp. From an innovation system perspective it is paramount to understanding the diversity and complexity of organisations in the system, as a way to identify positive and negative organisational dynamics in the innovation system that might be addressed by innovation policy. A tentative typology of innovation-related organisations in an innovation system might serve this analytical purpose. This will provide a broader contextualization of innovation activities and the agents of innovation.

We can distinguish between two dimensions. The first dimension refers to the involvement of the organisation. Here we might distinguish between **organisations that are directly involved, conducting innovation activities**, and **organisations that are indirectly involved, regulating or supporting the innovation activities of other organisations**. This distinction is relevant from the perspective of our definition of innovation as a new creation of economic significance. Hence, those organisations directly involved in these new creations are those belonging to our first type, whereas those organisations which are not directly but only indirectly involved in these new creations (regulating them, approving them, testing them, supporting their development, etc) belong to our second type.

The second crucial dimension in our typology of organisations has to do with the explicit purpose for which they were consciously created. Here we can distinguish three types. The first type is private organisations with a for-profit purpose. These are typically different forms of private firms, which produce new products and services in the manufacturing and service sectors. But they can also be private for-profit organisations that indirectly support innovation activities, like business services, or other for-profit organisations. A second large type is made up of public organisations, which are defined here as those organisations with the ultimate purpose of producing public goods. They are typically owned by the state or other form of public authority, and are subject to public law regulations and public law procedures. This is naturally a large group, with organisations like public research universities, public research institutes and laboratories, directly involved in innovative activities; but also organisations like public regulatory agencies, which indirectly regulate innovation activities exercise different forms of public entrepreneurship (Klein et al., 2010) and have different strategic capabilities (Klein et al., 2013). The third large type is composed of hybrid organisations, defined here as organisations which have combined purposes and ownership (profit and non-profit purposes – and public-privately owned). Examples of this type of organisation are private not-for-profit organisations like scientific associations, or standardization/certification bodies.

INSERT TABLE 1: Types of organisations in the innovation system according to their involvement and purpose

	Direct involvement: Conducting innovation activities	Indirect Involvement: Regulating/supporting innovation activities
Business organisations: Private for-profit purpose	Firms in the manufacturing and service sectors directly conducting product and process innovation activities.	Organisations and firms selling services which support innovation activities conducted by other firms. i.e. Venture Capital firms; consultancy firms; etc.
Public organisations: Public purpose	Publicly owned and public good purpose organisations directly conducting innovation-related activities, i.e.: public research universities, public research laboratories, public research hospitals, etc.	Publicly owned and public good purpose organisations regulating or/and supporting innovation activities carried out by other organisations; i.e: Public regulatory agencies in innovation-related areas (medical devices and pharmaceuticals, food and consumer safety, energy sector, ICT sector, etc); Patent offices; Competition regulatory authorities; Public vocational training schools and organisations, etc.
Hybrid organisations: Combined purposes and ownership	Private ore semi-public not-for-profit organisations, or semi-public organisations with mixed purposes directly involved in innovation-related activities, i.e: Public-private partnerships building and managing research infrastructures	Private not-for-profit organisations or semi-public organisations with mixed purposes supporting innovation activities carried out by other organisations, i.e. Philanthropic organisations supporting innovation-related activities; Scientific associations; Standardization bodies; etc.

As the table above tends to suggest, the innovation system is formed by an ecology of organisations which conduct and/or support innovation activities. The exact distinction between the types of innovation activities (when it is actually conducting innovation or just supporting it) might be difficult to make at times, especially when the innovation activities are of a non-technological character. The same can be said about the purposes of the organisations, as these are not always explicitly stated. In any case, the typology above is a useful way of approaching an otherwise bewildering diversity of organisational activities and their interplay in shaping the innovation system. The typology serves as well to contextualize the position of firms (as business organisations) among other types of organisations directly or indirectly involved in innovation activities. The next two sections focus on the organisations that are directly and indirectly involved in innovation activities.

3. Organisations conducting innovation and economic entrepreneurship/ intrapreneurship: The systemic approach

Innovation is purposefully undertaken by firms and other organisations seeking to create novelty in order to gain comparative advantage (Metcalfe 1995). For this reason, variation and the selective environment in which firms operate are two crucial themes in evolutionary economics when discussing technological change and innovation through time. Regarding the first, Metcalfe reminds us that the generation of variation (of knowledge and technology) is crucial to understanding the dynamics of change. This is strongly based on the process of selection and the environment in which this selection takes place, which is not only an external cross-organisational issue, but also internal to the organisation. “The concept of a selective environment requires careful handling. In the simplest cases, it can be equated with a market mechanism within which users and suppliers interact in traditional fashion. However, this represents only one level and mode of selection. Any framework in which agents interact in order to choose between competing patterns of behaviour has selective properties. In particular, organisations create their own internal selection environments to choose between competing alternative futures and their associated patterns of behaviour” Metcalfe p. 29.

These two items, i.e. innovation as the outcome of a cross organisational selection environment and innovation as the outcome of internal based selection, bring us to the issues of entrepreneurship and intrapreneurship. Starting with the first, the indisputable landmark in economic theory on entrepreneurship, innovation and economic growth is Schumpeter’s notion of creative destruction (Schumpeter, 1942/2005). This pattern of innovation is characterised by the centrality of individual entrepreneurs and small-firms creation. This has been labelled “Schumpeter Mark I”, in contrast with “Schumpeter Mark II” where patterns of creative accumulation take place as innovation activities are conducted mainly inside large firms. “The first [Schumpeter Mark I] represents a widening pattern: concentration of innovative activities is low, innovators are of small economic size, stability in the ranking of

innovators is low and entry of new innovators is high. The second represents a deepening pattern: concentration of innovative activities is higher than in the first group, innovators are of larger economic size, stability in the ranking of innovators is greater, and entry is lower.” (Malerba and Orsenigo, 1996) p. 451. The empirical findings of Malerba and Orsenigo show that these two patterns of innovation are related to different technologies, as properties of the knowledge base, opportunity and appropriability of different technologies are key, and serve towards understanding cross-national differences according to technological specialization. These empirical findings indicate that possible debates about whether large or small firms are the most important for innovation are fruitless, and that it might be worth looking at the synergetic effects of large and small firms (Baumol, 2002). In the same vein, the external and internal dimensions of these processes, entrepreneurship and intrapreneurship, may be seen as two distinct but interrelated socio-economic phenomena.

The links between entrepreneurship, intrapreneurship and innovation are varied and complex (Audretsch et al., 2011), and there is a vast literature on them. Yet, for the purposes of this paper, we might need some conceptual clarification. Following the opportunity and process approach in most entrepreneurship studies (Shane and Venkataraman, 2000), we define it here as the process of discovering, evaluating and exploiting opportunities to create goods and services that happen via the establishment of new organisations.

Intrapreneurship is when this process takes place within already established organisations. The entrepreneurship literature has devoted considerable time to discuss the different types of entrepreneurship (opportunity-based or necessity-based, and more), here including when is entrepreneurship innovative or not (Henrekson and Johansson, 2009). Our definition of innovation earlier in this paper refers to novelty in terms of “new to the firm”, “new to the sector” and “new to the world”. Therefore, not all forms of entrepreneurship or intrapreneurship will be innovative.

Turning back to the goal of this paper, which is examining the role of organisations and in particular entrepreneurship and intrapreneurship in the innovation system, there are three recent trends in the

literature which are worth pointing at. Firstly, there are very interesting attempts to bridge the gap between the agency-focused entrepreneurship literature and the institution-focused literature on national systems of innovation (NSI) (Ács et al., 2014). “[The] routine-reinforcing perspective of NSIs has proven difficult to reconcile with the individual-centric, routines-breaking emphasis of the entrepreneurship literature” (Ács et al., 2014) p. 478. Hence, the way in which entrepreneurship is linked to social attitudes (van Praag, 2011), and to the individual traits of the entre/intrapreneur (Shane, 2003) needs to be complemented with a systemic and institution-based approach to entrepreneurship. The second recent trend is the introduction of the concept of “social entrepreneurship” acknowledging that entrepreneurship and innovation are not only related to private-for-profit organisations, but also to public and hybrid types of organisations (Steyaert and Hjorth, 2006). This has stimulated efforts to use Schumpeter’s theory on entrepreneurship and creative destruction to study social change more broadly (Swedberg, 2006). Third, there has been an increasing focus on studying organisational change and innovation inside the (large) firms (Lazonick, 2005); what we might call here intrapreneurship. This is reflected in recent analytical efforts behind the notion of “employee-driven innovation” (Kesting and Ulhøi, 2010), as well as in the rapid growth in books and studies about how to manage innovation processes inside the firm (Tidd and Bessant, 2013). These two wide and different approaches to intrapreneurship are highly related to the importance of organisational forms, learning and decision-making processes inside the firms for understanding the innovative performance of the individual firm, as well as of the economy at large (Drejer et al., 2004).

From an innovation system perspective, and particularly from the current perspective of this paper focusing on innovation policy, it is worth considering the pleas for studying the linkages between the macro-structural dimension of national systems of innovation and the micro-dynamics of entrepreneurship and intrapreneurship at the organisational level (Lundvall, 2007). It is also worth considering the existence of hybrid types of organisations in the innovation system, as well as the blurring boundaries between their activities when conducting and regulating/supporting innovation activities (as discussed in section 2). On

this basis, this paper suggests that a way of approaching these macro and micro-level linkages is to look at the creation of variation and selection in the environment.

This brings us back to Stan Metcalfe, who distinguishes policies which influence variety generation from those which influence selection process. This is a useful distinction, as it serves to discern the different effects of innovation policy on organisational dynamics. Innovation policy is a rather broad policy, encompassing a wide set of public policy areas of action (Borrás, 2009) and largely overlapping with other policies like energy, health, telecommunication or competition. It is worth noting here that Metcalfe's distinction has to do with the role of the state as well, either as supporting some dynamics (creating variation) through the encouragement and enabling of organisations, or as regulating these dynamics (selection environment) through the control and constraining of organisations' behaviour. Whereas the first concerns the support of innovation activities by encouraging clusters and entrepreneurship ecosystems (Pitelis, 2012), the second refers to the regulation of innovation activities by e.g. defining the costs and conditions for firms' market entry (Prantl, 2011). The next section examines both.

4. Policies Regulating/Supporting Entrepreneurship and Intrapreneurship

Entrepreneurship is typically an issue that attracts considerable attention from governments because it is seen as a source of present and future economic growth and dynamism. For that reason, governments have put forward different policy instruments that are combined in specific mixes (Borrás and Edquist, 2013). In a seminar paper, Henrekson and Stenkulas identify generic types of policy instruments that have potentially important effects for entrepreneurship and intrapreneurship (Henrekson and Stenkula, 2010). Thereafter, they classify them according to four tenets (Baumol et al., 2007). These four tenets are: ease of starting a business, rewards for productive entrepreneurial activity, disincentives for unproductive activity, and incentives to keep winners on their toes. Looking carefully at these, we can see that the first two correspond to what Metcalfe sees as creation of variation, whereas the latter two refer to creation of selection environment. Policy instruments like regulations on business creation, capital constraints, labour

market and social security; or direct support to entrepreneurial activity like start-up incubators, are typically those which most clearly affect the creation of diversity because they have the most effect on how easy it is to create a new business and rewards and incentives for productive entrepreneurial activity.

On the other hand, we have regulations like taxation laws, bankruptcy laws, competition laws (particularly anti-trust and merger control), intellectual property rights, and trade regulations, all of which create a selection environment by means of disincentives for unproductive activity and incentives to keep winners on their toes.

Besides these policy instruments, this paper argues that there is another broad type of policy instruments, which are focused on stimulating behavioural change. Entrepreneurialism is not just a matter of market or institutional conditions, but also an issue of culture and social attitudes. Many national, regional and local governments have created a series of instruments to motivate, to inform, and to educate potential entrepreneurs. Examples of these are: entrepreneurship schools at technical universities; information and coaching packages; awareness-raising campaigns about entrepreneurship; entrepreneurs- business angels meetings and events; and entrepreneurship prizes and awards. Yet, these schemes might have different effects (Ramlogan and Rigby, 2012). Table 2 summarizes these three sets of policy instruments.

INSERT Table 2: Policy instruments for entrepreneurship

<i>Policy instruments creating variation</i>	<i>Policy instruments creating a selection environment</i>	<i>Policy instruments promoting entrepreneurial culture</i>
Business creation laws Regulations on capital constraints Support to venture and risk capital Labour market and social security regulations Incubators Support packages to start-ups	Taxation laws Bankruptcy laws Competition laws (particularly anti-trust and merger control) Intellectual property rights Trade regulations	Entrepreneurship education Information and coaching packages Awareness raising campaigns Entrepreneurship awards Meet-business-angels events

Regarding the intrapreneurship dimension, it is also worth noting here that recent decades have seen some OECD countries promoting the distribution of best practices of innovation management activities as a form of promoting organisational change inside firms and other organisations (Freitas, 2007). These public initiatives seek explicitly to enhance the innovation management competences inside firms, helping them

with business management tools and approaches that can inspire and stimulate the business community.

Some of those are schemes launched at the national level, whereas others are mostly designed and carried out by regional and local governments.

Naturally, some of these governmental initiatives for entrepreneurs and intrapreneurs are not carried out by public organisations in isolation, but in close cooperation with private and hybrid organisations, which have closer ties to the market and the society. This is to say that public policy must be seen in relation to the ecology of organisations supporting organisational capacities as a way of fostering innovation. Whereas the “arm of the state” is most visible in regulations and binding laws (like competition law, taxation law or trade law), many other supportive measures aimed towards entrepreneurship and intrapreneurship are designed and implemented by an interaction of multiple agents. This is particularly the case for the more “cultural” dimension of entrepreneurship policy (like entrepreneurship awards).

In order to elaborate further on innovation policy design, the next section carefully examines what are the bottlenecks and imbalances in an innovation system in terms of entrepreneurship and intrapreneurship.

5. Systemic Bottlenecks Associated with Entrepreneurship and Intrapreneurship

When the notion of ‘innovation system’ was put forward and developed in the early 1990s, the main focus was on countries with advanced market economies. Many important cross-country comparative studies at the time were focusing on Western countries, or on OECD countries. The traditional case studies were Japan and the Scandinavian countries, all with high levels of existing and newly entering innovative firms, and with a rich ecology of organisations supporting and regulating innovative activities. In a sense, the literature during that time took for granted that national systems of innovation invariably had strong innovative firms, strong entrepreneurs, strong intrapreneurs, and well-functioning organisational support for these. However, these implicit assumptions came into question with the subsequent expansion of this analytical framework in the fields of regional economics and development economics (Lundvall et al., 2009). Weak regional and

national economies do not have strong entrepreneurs and intrapreneurs, let alone an ecology of organisations supporting and regulating such activities.

The above reminds us of the importance of not taking for granted these conditions for organisational change in general, and for entrepreneurship and intrapreneurship in particular. Taking a step back, we might need to look at this matter from a system perspective. Looking at the way in which organisations (individually and collectively, in the the ecology of organisations taken as a whole) suffer from some bottlenecks and imbalances in the innovation system is a paramount step to take in relation to the design of innovation policy. From this perspective, this paper identifies at least three possible bottlenecks in the innovation system.

The first has to do with a weak level of entrepreneurship and new entrants in the economy. The number of new entrants in the economy and their ability to create new business models that challenge established firms are paramount for any economy or innovation system to stay competitive. Levels of entrepreneurship matter for the performance of the innovation system, either with new science-technology based firms (i.e. spin-offs from universities, or high-tech start-ups), or new and innovative firms which are not science-based (i.e. new firms entering mature sectors by bringing substantial novelties through process innovation) (Audretsch et al., 2011). Some examples of well-functioning local/regional innovation systems, like Silicon Valley, show the strong link between entrepreneurship and innovative performance in high-tech sectors. Other successful examples of entrepreneurship and innovation include local innovation systems based in low-tech or medium-tech sectors, and with less geographically concentrated dynamics. Naturally, there is no one-size-fits-all, or minimum level of 'critical mass' of entrepreneurship in an innovation system beyond which there is invariably a problem. However, this does not hinder identifying a bottleneck when the levels of entrepreneurship are not sufficiently high to keep up with the 'mortality' of firms and the subsequent effects on economic growth and jobs. This leads to the next issue, namely the origins of bottlenecks, which might be difficult to determine. The bottleneck might be a matter of socio-cultural dynamics (generalized risk-averse social attitudes, or lack of societal reward/recognition of entrepreneurs), or a matter of policy-

generated problems, either because important variation-creation policies mentioned above in Table 2 are ineffective or simply absent.

The low organisational capacity and innovation by established firms constitute the second possible type of bottleneck. It refers to a fundamental issue of the internal managerial processes and intrapreneurship inside firms (Drejer et al., 2004), which might not be sufficiently strong to keep up their competitive advantage vis-à-vis rapidly changing market and technological contexts. Clearly, weak intrapreneurship is an issue that is as relevant to SMEs as it is to large firms. As we have seen in this paper, firms are currently exposed to very rapid changes in terms of an increased globalized market competition and rapidly changing technological developments, with consequences like the shortening of product life cycles, and new entrants and competitors in core business areas. These contextual changes offer new opportunities to any established firm, but they also pose important challenges to them. From an innovation system point of view, the bottleneck might arrive when/if a large number of firms in an economy are weakly or not sufficiently engaged in innovation activities to keep up with the rapid pace of contextual change. The low innovation performance levels of firms in a given economy might rapidly erode the competitive basis of those firms. Last, but not least, a third type of bottleneck is associated with the issue of selection environment. This is a type of bottleneck that is related to the conditions under which possible entrepreneurs and intrapreneurs operate. It refers to the problems when a selection environment is not operating in a way that rewards productive entrepreneurial activity, generates incentives to keep winners on their toes, and provides disincentives for unproductive activity (Henrekson and Stenkula, 2010). Again, the bottlenecks might be generated by the environment itself, or by ineffective or absent policies. This is to acknowledge that policy is not always a solution; it might even be part of the problem. Therefore, any analysis about the conditions under which innovation systems stimulate entrepreneurship must take these policies as part of the equation.

6. Concluding Remarks: From Policy to Governance

Having seen that organisations, entrepreneurship and intrapreneurship are ubiquitous social phenomena, we may now come back to the issue of the role of public policy and its limits. In its previous sections, this paper has determined what bottlenecks public policy might need to address, what types of initiatives have been launched in order to address them, and the extent to which policy initiatives themselves might sometimes become part of the problem rather than part of the solution. However, the issue of the limits of public action remain unaddressed.

This paper's identification of different organisations based on their public, private and hybrid purposes (in section 2) serves to recognize that any form of public action is embedded in a specific ecology of organisations, and not only in a set of specific political values, collective ethos or particular history. The nature, dynamics and composition of these particular ecologies of organisations are crucial aspects when considering the role of public policy and its limits.

This refers to two interlinked issues. Firstly, that public policy must target specific challenges and bottlenecks in a system, and those might differ considerably across regions or countries according to the features of their economy and innovation system. Furthermore, each country or region has a specific composition of organisational ecosystem (see box 1 earlier in this paper), meaning that there is no "natural" or pre-determined definition of the turf among public, private and hybrid organisations. Variation across ecosystems is large.

The second issue is concerned with the fact that entrepreneurship and intrapreneurship are socially embedded phenomena, and hence subject to some territorial dynamics as much as to some functional dynamics (Lindholm Dahlstrand and Johannisson, 2013). This view on the double nature (the geographical anchorage as well as technological and sectoral dimension) of entrepreneurship activities has triggered an effort to see entrepreneurship in a contextual manner, beyond the personality of heroic individuals. The same can be said about public policy; namely, the fact that public policy is embedded in a complex socio-

political context defined by the ecology of organisations' activities supporting and/or regulating innovation in a system. In other words, public policy is also embedded.

For these reasons, this paper suggests the need to introduce a governance approach to organisations' activities when it comes to the study of innovation policies. Such an approach takes into consideration the wide diversity of organisations already existing, as well as their interactions in terms of providing positive effects in terms of creation of variation, a well-functioning selection environment, and a positive social attitude towards risk-taking and entrepreneurship/intrapreneurship activities.

This requires designing public policies in a contextual manner (considering what other organisations already are doing, and the need for further public engagement). Furthermore, it requires that public policies actively stimulate the involvement of hybrid and private organisations in order to provide a rich and stimulating organisational ecosystem. But rich and complex organisational ecosystems bring forward issues of how to secure the complementarity of these initiatives. Complementarity does not only refer to avoiding crowding out effects across organisations' activities supporting and regulating innovation, but more essentially securing coherence in the interactions across different institutions (as rules of the game) in the innovation system; just like the literature on Varieties of Capitalism has emphasized. However, many theoretical and empirical research questions remain still open in this regard. Most important among them is the question whether countries are designing (and most recently reforming) their innovation policies so that they are actually fostering complementarity in the innovation system, and are improving competitiveness in a context of globalised economy and economic crisis.

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