

Title

Innovation policy rationale in the Innovation System Framework:
Toward conceptual coherence?

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Keywords

Innovation System, Innovation Policy,

Introduction

The Innovation System (IS) frameworks are widely used to analyse and map determinants, mechanisms and output of innovation activities within nations, regions, sectors, and technological domains. The closeness to empirical contexts and flexibility in application have made the IS framework popular and valuable tools for both researchers and policy-makers. The OECD has over a number of years based policy strategies and recommendations on IS-analyses of various countries and sectors, and the same holds for nation states. Thus, the IS framework is an integral part of the knowledge base for policy-making. As of today the ISs are still more conceptual frameworks than they are theories, and no canonical definitions of concepts exist (Edquist, 2005), resulting in *conceptual ambiguity*. This holds also for the *rationale for innovation policy*. Providing a rationale for policy is crucial, as it legitimises the public intervention in business- and social life. Further, from a theory of science point of view, *conceptual coherence* is crucial for the potential of accumulation of general and reliable knowledge (Lundvall, 2007; Mjøset, 2009).

For the IS framework to keep their position as knowledge- and rationale provider for policy-makers, I argue a conceptual coherence is necessary. From the above we can derive the following research question:

RQ: How can we formulate a conceptually coherent innovation policy rationale for the Innovation System framework?

The core argument in this paper is that an innovation policy rationale must be found outside the conceptually diffuse analytical framework of the ISs. This is essential to provide commensurability between individual case studies and IS analyses, forming a basis for accumulating general knowledge. Therefore I look to the principles of evolutionary economics and the selection environments proposed by Freeman (1992 –ch. 6) to formulate a rationale for innovation policy with potential for conceptual coherence. This does not, however, imply a ‘theorising’ of the IS framework. It is merely an attempt to provide a ground for comparison and accumulation of knowledge across individual case studies, strengthening the knowledge base developed through IS analyses.

Policy rationale

The rationale (i.e. the logical reason) for innovation policy (i.e. governmental intervention in business- and social life) has turned from a ‘market failure’ rationale to a ‘system failure’ rationale, the latter formulated to conform to the systemic view of the innovation process held forth in the IS framework. The ‘system failure’ rationale subscribes policy based on a ‘diagnostic’ analysis of the IS, identifying bottlenecks or friction in the interaction and activities or functions in the IS. It claims to be non-normative, in the sense that there exists no optimum for an IS, as it does for instance for a market equilibrium. Thus, to identify problems or failures, comparative analysis and benchmarking is required. Based on the above, the ‘system failure’ rationale, I claim, is

formulated in the analytical characteristics of the IS-framework and is thus subject to the same conceptual diffuseness as are other concepts (e.g. institutions).

On the need for a more ‘theorised’ IS-framework

Due to the reigning conceptual diffuseness, Edquist (2005) argues for a more ‘theorised’ IS framework in order to strengthen the explanatory power and ‘correct’ use of the IS framework (preventing it becoming an empty buzz-word or label). On the other hand, Lundvall (2007) argues to retain the flexible character of the IS framework as this is one of its main strengths. Further, as Lundvall (2007) points out that it is far from clear what actually constitutes ‘theory’ in the social sciences. Attempting to conform the IS to a formal definition of theory, with general laws of causality, may not be comprehensible.

It is in the tension between these two positions I formulate my argument: Between keeping the flexible and quasi-theoretical character of the IS and the call for a more theorised conceptual apparatus, I argue for a middle ground solution; a *conceptual coherence* providing commensurability between individual case studies and potential for accumulation of knowledge within the IS frame of interpretation and understanding. This is essential to be able to develop *transferrable mechanisms* (as opposed to general laws of causality) and general and reliable knowledge about key determinants and dynamics of innovation systems. I propose to formulate a policy rationale, not in the analytical framework of IS, but based in the properties of evolutionary economics and the selection environments proposed by Freeman (1992:123-132). These are sources of conceptual coherence built on extensive empirical research, thus providing general and reliable knowledge about key mechanisms in the innovation process. Further, a common definition of concepts does not necessarily bring more ‘theory’ to the IS framework, but it is necessary for accumulation of knowledge, cf. the ‘contextualist approach’ (Mjøset, 2009).

Sources of conceptual coherence

In search of a source for conceptual coherence it is natural to look at the underlying theoretical framework upon which the ISs are based, combined with the characteristics of the selection environments proposed by Freeman (1992). Evolutionary economics offers theoretical rigidity and stringency, making it a sound base for a common definition of innovation policy rationale. An attempt to build conceptual coherence based in a theoretical framework does not, however, mean I am trying to ‘theorise’ the IS along the lines of Edquist. It is merely an attempt to formulate an intension of innovation policy outside the flexible and diffuse analytical frameworks of today’s ISs. Further, these sources of conceptual coherence are empirically valid, i.e. they are not theoretical constructs, but syntheses of empirical research.

By contrasting evolutionary economics to neoclassical economics (the basis for the ‘market failure’ rationale) four key principles (amongst several) can be

extracted which can help in distinguishing the market failure and the system failure rationale, and which provide significantly different policy rationales:

- i) *Rationality*: (bounded vs. perfect) Actors are not rational in the strict sense, and predicting outcomes of decision making is not an exact science, as it is with perfectly rational agents. This has a crucial impact on the effect of policy initiatives. As actors are not perfectly rational, we cannot predict their responses to a policy instrument. The preference structure is hard to identify and decision making is obscured.
- ii) *Perception of time*: (historical vs. mechanical) historical time is a fundamental condition for path-dependency and accumulation of knowledge and skills. Relating to innovation policy this is essential in terms of understanding past action and which restrictions and possibilities these lay for present action. Policy makers must understand the context in which they intervene, and history in the form of path dependency is thus a crucial factor to account for.
- iii) *Technology creation, (innovation)*: (endogenous vs. exogenous) Acknowledging that technology is created within the system itself, rather than being 'manna from heaven', also implies a possibility to govern technology creation.
- iv) *Normative principle*: The main implication here is the rationale this principle provides for policy. The normative principle contains all other conditions, and is formulated upon the basis of these conditions being met. Thereby we have very different policy rationales, both in terms of goal attainment and policy tools.

Further, I use the selection environments presented in Freeman (1992) to formulate an intension of innovation policy for the IS framework:

- i) The natural selection environment
- ii) The built selection environment
- iii) The institutional selection environment

Within each of these three selection environments there are spaces for policy affecting all of the three process phases of variation, selection and retention. It is therefore a comprehensible outset for defining a policy rationale based on empirical syntheses.

Outcomes

The search for an innovation policy rationale outside the conceptually diffuse innovation system framework potentially leads to a more coherent definition of a rationale. Arguably, this is one way in which some of the conceptual

diffuseness is reduced and a step in making analyses of innovation systems more comparable and increasing the potential of identifying transferrable mechanisms. This is an important step in the development of Innovation System framework if they are to maintain their role as provider of rationale and knowledge for policy making. Further, the rationale developed in this paper must be applied in an empirical context, and the empirical context must be used to *refine* the intension of innovation policy rationale, but not *define* it.

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