The Effects of Innovation Network Policies

Since the late 1970s, networks have become an important component of technology and innovation policy in many countries. Networks allow for rapid learning and facilitate the reconfiguration of relationships between suppliers (in the case of companies) and producers of knowledge (other companies or research institutions); they can also stimulate the development of additional cooperative activities including training, technological development, product design, marketing or facilitate knowledge pooling, skills sharing, the sharing of facilities, equipment or datasets and the co-development of programmes of joint research. However there are few reasons to believe that such beneficial cooperative relationships can emerge automatically and such failures provide a strong rationale for public intervention. Governments may intervene in order to facilitate the establishment or continued development of a network due to the lack of, or insufficient awareness of, the opportunities they present. Intervention may be used to overcome barriers to network formation such as the fear that there may be unfair appropriation of the benefits accruing from collaborative undertakings. In such circumstances, governments are able to offer knowledge sharing frameworks which provide a level of security as a means of reinforcing the mutual trust upon which successful cooperative arrangements rely. Intervention can also be used to guide firms towards network membership (either with other firms or with the science base) in order to overcome technological "lock-ins", to enter a new area or to change management practices. This report reviews and reflects on the evidence of the relationship between public support for networks and the impact on innovation. It provides a conceptual background for policy instruments that enhance innovation through the activities of networks, the rationale for their deployment and the main types of approach adopted. Drawing on a review of the available literature, it presents evidence on the impacts of policy interventions on network creation, management and behaviour and -where available- the effects of networks on innovation from a variety of forms of network support. This evidence is analysed against a framework that examines the rationale and goals of network policies and the extent to which expected outcomes have been realised with respect to such issues as collaboration/networking, partnerships, leading edge research, research training and the transfer and exploitation of knowledge and the cost effectiveness and design issues of networks. Two important issues emerged from the analysis. First, the complexity of networks and the diversity of motivations, rationales, activities, outputs, outcomes and effects make the task of evaluation very difficult. Evaluations tend, therefore, to focus on specific aspects of network behaviour rather than covering the complete set of potential variables. Second, the timing of evaluations is, in many cases, a critical issue. Several of the evaluations and reviews considered found it difficult to make quantitative assessments of network effects, largely because many of the outcomes that could be used as proxies for this measure, such as patenting behaviour, had yet to materialise. Moreover, in many cases there was no baseline of existing capabilities and networking from which progress could be measured. Consequently the evaluation of network quality followed from activity analyses and interview responses. Among the key lessons that have emerged from the analysis are the following: i) Networks can have very positive effects on the stimulation of learning processes and the enhancement of skills levels. ii) Despite (or because of) the diversity and the complexity of various network forms, there is little evidence (especially quantitative evidence) to explain which forms of network most contribute to innovation or, indeed, whether networks do and, precisely how, lead to innovation. iii) Strong network management and leadership (such as through a board of directors), coupled with transparent and efficient administrative processes are overwhelmingly cited as essential contributory factors for network success. iv) Established (informal) networks, or pre-existing connections and relationships form the optimal basis for the establishment of more formal policy-led initiatives for the creation or development of networks. v) Network participants need to actively manage their networking relationships; experience and network management competencies can strongly influence the gains to be made from network participation. vi) Policy instruments that facilitate network formation and development (such as support for network brokers or other intermediary organisations) are often successful in achieving these broad objectives. While all firms in a network benefit from being part of a network, the establishment and management costs are borne largely by the network organiser. Public intervention can therefore be used to mitigate this 'free-rider' effect. vii) Networks fail for a variety of reasons, but lack of demand, trust, commitment and excessive bureaucracy seem to be identified as major causes. viii) Government intervention can act as both a positive and negative force affecting the sustainability of particular networks and

network infrastructures. It can be very difficult to predict the development path of a network since it can be influenced by unpredictable events or by the unintended effects of other policy actions or the regulatory context. In the absence of a bottom-up process of self-determination, top-down initiatives that select target industries, technologies or scientific fields, may not succeed.
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