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Innovation policy evaluation ? challenges and roads ahead

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Abstract

The innovation literature has established that successful innovation processes are often based upon collaboration and networks. The innovation system thinking emphasizes networks but also their supporting informal institutions, learning processes, and the relations between actors in the system. Despite the importance of networks, evaluation studies have been sparse regarding investigating effects of these as well as on the broader criteria to evaluate the innovation networks and functioning of the system. This paper discusses what are such criteria for evaluating innovation policies that rely on enhancing system connectivity and repair system failures? By way of illustration, and as a mean to be specific on these criteria, the paper discusses the possible rationale for governments to support business angel networks (BAN) and what criteria to apply when evaluating such networks.

It is found that applying traditional evaluation criteria for assessing BANs may provide only a partial picture. The broader benefits of an angel network include both direct and indirect effects. In a case of the Danish Business Angel Network it is illustrated that it was closed down because of lack of understanding of the important effects that go beyond the immediate effectiveness. Other evaluation perspectives, that include also effects at a system level, would probably have resulted in a different decision. Implications for innovation policy evaluation are derived.

Innovation policy evaluation – challenges and roads ahead.

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It is found that applying traditional evaluation criteria for assessing BANs may provide only a partial picture. The broader benefits of an angel network include both direct and indirect effects. In a case of the Danish Business Angel Network it is illustrated that it was closed down because of lack of understanding of the important effects that go beyond the immediate effectiveness. Other evaluation perspectives, that include also effects at a system level, would probably have resulted in a different decision. Implications for innovation policy evaluation are derived.

1. Introduction

For a couple of decades innovation policy evaluations have progressed in several ways, two of which are in focus here. First, rather than having market failure as the core, evaluation studies and policy understanding have moved towards focusing upon systemic failures. The 'market failure' argument claims that in case the market is not able to solve a (allocation-) problem efficiently, perhaps because of lack of information, indivisibility, uncertainty, externalities and inappropriability etc., then there may be a case for government intervention (Arrow, 1962). Innovation policy evaluations have previously solely focused upon pointing out these market failures as a rationale for policy intervention. Policy schemes for alleviating market failures have been evaluated through quantitative studies that document gaps (failures) in the markets and the additionality of policy schemes, usually using relatively narrow, measurable indicators¹.

A new understanding focuses upon system failures. It stems from relatively recent progression in the innovation theory where actors, interactions and the institutional set-up are now seen as important elements in systems of innovation. The innovations in society are embedded in a systemic context of demand, other firms, other organisations, networks and institutions (Dosi, 1988, Fagerberg et al., 2005, Lundvall (ed.), 1992). Interactive learning processes among relevant economic actors are vital to improve innovation and connectivity of the system is vital but depends on adequate links between actors.

Hence, with the upsurge of innovation system thinking traditional market failure approaches to policy has been supplemented, and in some cases replaced by, policies aimed at alleviating system failures (Lenihan, 2011). System failures may be failures in capabilities, institutions, frameworks or networks (Arnold, 2004). Network failures may specifically be inadequate interactions and links between key agents in the innovation system (Edquist et al., 2000). Thus, they may be inadequate frequencies of linkages, poor quality of linkages, or lock-in problems. The policy approach following this is to remove obstacles for efficient and effective exchanges of economically useful knowledge for innovation.

¹ A report synthesizing results and approaches from a broad range of enterprise policy evaluations in the UK (SQW Consulting, 2009) concludes that arguments for policy interventions were solely confined to market failures and that broader, societal effects are by and large neglected.

Just as learning is important in innovation it is also important in the development of innovation policy. Evaluations have traditionally been one of the important means for this learning. However, when it comes to innovation networks discussions on methodological challenges of evaluation of networks are sparse² despite the fact that a number of papers point to the need to see innovation in a system perspective and the fact that this perspective is characterised by seeing the economy and innovation in particular as reliant on networks and interactive learning (Lynch et al., 2009).

A second progression in innovation policy evaluations regards the way outcomes are evaluated. Whereas traditional policy evaluations previously were confined to a focus upon immediate, measurable, direct effects of a given policy scheme within a specific time period, outcomes are now often seen as something much broader.

The broader view on policy effects in evaluation studies has included what has been denoted 'behavioural additionality' (Georghiou et al., 2004, OECD, 2006). Whereas the majority of evaluation studies and policy makers mainly have focused upon directly measurable effects, and in particular effects such as input additionality (essentially displacement effects – whether e.g. a subsidy is provided to activities that would have taken place anyway or if it induces complementary activities) and output additionality (outputs that would not have been achieved without support) and substitution effects, there is now a growing recognition that policy schemes may also impact the behaviour and strategies of actors in a long term perspective, longer than the duration of the scheme. Even other more types of broader effects are now attracting attention in evaluation research. For example, Lenihan (2011) argues that traditional evaluations tend to focus too narrowly on firm level effects, while a policy shift towards more emphasis on systemic policies call for broader evaluation metrics that also encompasses broader societal impacts. Following these arguments the criteria for evaluating effects should be extended beyond the immediate, observable impact, it is argued.

² This may be illustrated by the absence of network evaluation even in 'Handbook of Evaluation' (Shaw et al., 2006).

Although there is wide agreement that this is an expedient approach the literature has been relatively silent in specifying what we really mean by these broader effects. What are they, how can they be measured, what are their effect, and can anything general be said, or are they specific for the individual policy schemes? To get closer to answering these questions empirical studies, broader evaluations, new indicators, and elaborations on the nature of indirect effects are necessary.

The present study contributes to this end. It does not do so by reporting specific innovation policy evaluations, rather it firstly point out what should be included in comprehensive innovation network policy evaluation generally; then specify such considerations to a specific type of network; finally evaluates an evaluation in order to derive learning on deficiencies with current approaches and point out new avenues for innovation policy evaluation. Another contribution of this study relates to the above-mentioned characteristics of existing evaluation studies that they tend to be limited to studying a specific, often short period of time. By nature, such studies are unable to register behavioural and other long-run effects beyond the self-reporting accounts from actors. Longitudinal studies would be part of such an effort to increase knowledge in this field.

As explained in more details in section 2 these research questions are addressed by focusing the study on a narrow part of innovation policy. Following the arguments of increased importance of system connectivity networks are in focus. Even more specifically, the paper discusses the possible rationale for governments to support business angel networks (BAN) and how this corresponds (or not) to how governments evaluate a specific BAN. Derived from this research question, it is discussed what criteria to apply when evaluating such networks? The findings from this specific corner of innovation policy are generalized to how innovation policy more broadly should be evaluated³.

Section 2 explains the specific object of study, and the approach taken is explained in section 3. Section 4 discusses a general evaluation framework, whereas section 5 does so on a more specific level. Section 6 then explains about the case of DBAN. The final section 7

³ A number of additional challenges face policy evaluation other than those dealt with in the present study. See Lenihan (2011) for an account of these and the implications regarding what evaluations need to include.

concludes and applies the insights from the studies to the principle considerations on the innovation policy evaluation criteria.

2. Object of study

If one should point out the dominant areas of innovation policies over the past couple of decades, two stand out. First, national and regional governments have extensively promoted collaboration and networking between firms and between firms and other types of actors. Policy schemes include subsidies for costs related to R&D-collaboration, brokering and subsidies for industrial firms collaborating with knowledge institutions etc. This type of policy has also been spurred and accentuated by the upsurge of innovation theories regarding the innovation process in a system perspective and emphasizing the connectivity of the system. The other popular policy area is driven by a general consensus that markets fail to provide sufficient access to capital for innovation due to the intrinsic uncertainty connected to innovation, and the search and information problems related to innovation financing sources, just to mention a few of several reasons⁴.

This study takes its point of departure in the latter type of innovation policy but is in essence also closely related to the former. It has been argued that the most appropriate type of capital for innovation financing is venture capital. The institutional venture capital has, however, moved upwards in investment target. Therefore, stimulating the informal part of the venture capital market has become popular. Whereas the institutional venture capital is almost solely confined to large investments in relatively radical, scale able innovations in ICT, life sciences and clean tech, the informal venture capital is more relevant to the broad spectrum of innovation projects.

This market may be said to be functioning under severe informational constraints and 'market failures' and it may therefore be an objective for policies to remedy these information gaps. The rationale for public intervention in this market has also been said to be related to the fact that the business angels provide management assistance in addition to the money they invest; they have a different cost structure than institutional venture capital allowing

⁴ These two policies are also first on the list of Metcalfe and Georghiou (1998) in their assessment of innovation policies in Europe.

them to go into smaller deals, and they are more geographically widespread, which means that they contribute to alleviating regional financing gaps (Mason, 2009). Many researchers seem to advocate that business angel activity should be promoted (e.g. Mason, 2006, Sohl, 2007, Murray, 2007). One of the reasons for this is the perceived low costs associated with creating jobs through this type of intervention as pointed to by several studies over a decade ago (Aernoudt, 1999, Mason and Harrison, 1999, EBAN, 1998). The potential deficiencies at the market are furthermore argued to be easily remedied through simple means (Aernoudt, 1999). But there is debate about the means, the timing, and the extend of a possible role for government.

The instruments for stimulating the informal venture capital market vary (Aernoudt, 2005). Tax incentives, co-investment schemes and support of business angels networks (BAN) have been some of the most popular. The present study focuses upon policy initiatives to alleviate financial constraints for innovation through establishing and supporting a BAN in Denmark. This particular case is suitable for the present study.

3. Methodology and data

Innovation policy is an extremely diverse field. It would not help us to get down to a specification of what are the above-mentioned indirect effects of policy if the object of study is on a too general level of aggregation such as innovation policy of country x in period y. Consequently, the present study evaluates how effects are perceived of a specific corner of the whole innovation policy landscape.

There is an intrinsic dilemma in policy evaluations in that they should ideally on the one hand be independent and external to the parties involved. Although this is sound for many reasons it limits, on the other hand, how far evaluations can go in getting closer to finding, documenting and specifying indirect effects. Another intrinsic dilemma, which relates to the specific object of study in this case, is the fact that business angels prefer to keep their activities informal and not registered. This makes it particularly difficult to evaluate such activities with traditional evaluation metrics.

Recognizing these complications this study is based upon interviews with key actors in the DBAN as well as observation studies. The study of the evolution of DBAN was facilitated by the authors' involvement in the first idea generations and subsequent membership of the Board of DBAN. Whereas this may question if it is possible to be neutral and objective in the research, it meant on the other hand that it was possible to get access to all otherwise internal written documentation including internal minutes and status reports to and from the Ministry. In addition, interviews were performed with key persons who were involved in the DBAN and in the broad business angel community both during the period when DBAN was operating and after the closing down of the network. The study of DBAN was undertaken over a period of the whole 7 year life span of the network. As networks are by nature dynamic and evolves through several different phases, longitudinal studies are necessary even if our present knowledge of evaluation of network dynamics is dominated by studies of a static nature (Sydow, 2004). Moreover, the stage of development of a network should, according to Sydow (*ibid.*), have a bearing on evaluation. In the present study it is possible to assess different aspects across all stages of development as opposed to the majority of evaluations that typically come in at a mature or finalisation stage of networks. Reporting methods (Schmeideberg, 2010) on how the initiative evolved are used. These accounts are subsequently confronted with the theoretical and methodological discussion.

In essence part of this paper ultimately evaluates the evaluation and decision by the Ministry who supported DBAN. As there is no systematic, comprehensive evaluation of DBAN⁵ on which to base conclusions the assessment of the decision may seem subjective. It therefore limits itself to pointing out the factors that were not considered in the decision by the Ministry even if they, according to the evaluation framework developed in the paper, have effects.

4. A general framework of evaluating innovation policies

The upsurge of innovation systems theories during the 1980s and 1990s provided several important insights. One of these was the perception of the innovation process as being interactive and often based upon collaboration, not only between users and producers

⁵ Given the amount of money put into the initiative, and given that there was a (too-) large effort put into feasibility studies prior to initiating DBAN, it is surprising that decisions were not aided by professional evaluation.

(Lundvall, 1985) and between firms (Edquist et al., 2001) but often in a complex web of different types of input to the innovation process (Lundvall, 1992). These insights have affected the direction of attention of policy makers. Although there is a long history of policy schemes to enhance inter-firm collaboration there has been a rapid increase in these collaboration, network, even innovation system policies. As a natural consequence of this there has been a need to develop evaluation methodologies. Incorporating tools from different disciplines such as social network analysis may help in this respect (Russo and Rossi, 2009). Social network analyses generally are not very compatible with the traditional evaluations in which clear cause-effect relationships are often a basic prerequisite for conclusions and recommendations. It may, though, be helpful in displaying the state of affairs regarding connectivity of the system. Nevertheless, there seems to be a gap between the boost in policies and the abilities to assess their impact.

Appropriate evaluation of innovation generally is different than evaluation of many other areas although some of the tools from traditional evaluation may be used (Perrin, 2002) but in turn evaluation of interventions targeted at improving complex systems is different from that of evaluating ordinary innovation projects (Russo and Rossi, 2009) and evaluations of networks is likewise different (Hertting and Vedung, 2012). It involves assessment of the construction and management of networks and interactions that in themselves may be heterogeneous and complex. It also involves that evaluations should not be confined to assessing micro-level effects, rather the impact on a systemic level should be incorporated.

Moreover, methodologies for evaluation of interventions should be adjusted carefully to the nature of the problem in question. Some problems are simple, some are complicated, and others are complex (Rogers, 2008). The interventions may similarly be more or less complex or complicated. Edler et al. (2011) refer from and develops a methodology from an evaluation of innovation policies in Europe. One of their findings regarding methodology is that a holistic approach to evaluation is particularly important to policies supporting collaboration and indirect effects due to the multiple and complex effects and targets.

Recognizing these differences poses challenges to evaluation and means that indicators required to provide a meaningful description of the impact on the complex system as a

whole must be extended beyond traditional indicators, both in the scope and type of indicators as well as the methodologies used for collecting information on the impact. Although evaluation, as always, still needs to address appropriateness, impact and effectiveness (Arnold, 2004), the systemic perspective moves attention and weight in evaluations from micro-level, single interventions (projects, programmes) towards diagnostics of the impact on an aggregated, system level (Lenihan, 2011). Arnold (2004) even point out that there is a need to evaluate to a larger extent the totality of programme portfolios and in turn the impact on the overall health of the innovation system. To a large extent the policy mix rather than the individual initiative should be the object of study according to several observers (Flanagan et al. 2011).

Implications for evaluation are that they become less rigid and more focused upon behavioural additionality.

As Metcalfe and Georghiou (1998) states

'Operating in the context of complex innovation systems the policy maker must accept a considerable degree of indeterminacy and unpredictability in the consequences of policy initiatives. Complex systems are of necessity governed by ambiguity so that there is a strong case for policy experimentation and policy learning.' (p.80-81)

A number of evaluations have indeed taken in the notion of behavioural additionality. The concept of behavioural additionality is relatively young in the literature as it was first explained by Buisserat et al., (1995). Following a series of evaluations and OECD studies on this it has become popular in evaluation practices and is now considered an important target for innovation policy. The specification of behavioural additionality is, though, often left blank. Whereas behavioural additionality is often not considered it is also, when it is considered, not only unspecified, but also in cases it is not fully understood what is the nature of behavioural additionality⁶ (Gök and Edler, 2011).

⁶ It is in this paper understood as the change in behavior of relevant agents resulting from the policy action. The change in behavior may be temporary or persistent but should have an impact beyond the duration of the policy action. See Gök and Edler (2011) for a review of the understanding of the concept in the literature, problems related to the understanding of behavioural additionality, and suggestions to a new understanding.

As innovation policy is also concerned with changes in behaviour, hence behavioural additionality, the rationale for intervention may be argued to be broader than market failure and system failure. Additionally, capability and adoption failure relates to lack of success in inducement of behavioural additionality (Gök and Edler, 2011).

Innovation systems thinking emphasize that learning is a key driven process in the evolution of the system, therefore evaluations of policies should also address evaluating whether the learning processes are functioning adequately. Moreover, it should be recognised that as this approach to evaluation may render less precise, quantifiable results, in addition to uncertainty of the scope of the effects, we may face a 'tip of the iceberg' problem (Georghiou, 2007). A number of indirect effects and spillovers may be underneath what is revealed through traditional evaluation approaches.

Taking this one step further, it could be argued that evaluations on a system level should be accompanied by routines for deriving learning. Van Mierlo et al. (2010) argue that reflexive process monitoring may be instrumental in this.

5. Specifically on evaluating angel networks

5.1. Objectives and existing evaluations

Often the business angels market is denoted 'informal venture capital'. It is informal in the sense that many of the activities are not registered in official records, and the actors prefer to stay relatively anonymous. As a consequence, the 'market' for business angel financing is characterized by highly asymmetric information and by lack of information. The basic function of business angel networks is to try to remedy this informational gap by bringing together on the one hand firms and entrepreneurs searching for capital and competent investors, and on the other hand business angels looking for good investment opportunities. This means that BANs act as intermediaries in matching demand for capital and competences with supply of this embedded in business angels. The analogy of a marriage office has often been used.

Thus, the objective of policy in this area is to provide access to goods that the markets fail to produce, specifically networks, knowledge transfer, and coordination. As mentioned above policies now increasingly refer to system failures rather than market failure. Such policies may be particularly relevant in relation to BANs as it address institutions and capabilities related to the interaction between key agents in the system. The institutionalisation of networks enhances connectivity of this part of the capital market.

The awareness of business angels as an important source of financing and of BANs as an important facilitator of this financing source has increased substantially. In spite hereof and in spite of an increase in the number of business angel networks across Europe (EBAN, 2008, 2010) the available knowledge on the performance of such services is still limited. Only a few evaluations have been made (e.g., Mason and Sackett, 1996, Collewaert et al., 2010, Harrison and Mason (eds.) (1996)) and they have primarily been confined to the UK context. These few evaluations have shown that BANs contribute substantially to job creation and that the public costs per job are low (EBAN, 1998, Mason and Harrison, 1999).

As mentioned, access to adequate data is problematic in this area. This relates not only to the intrinsically informal character of the activities, which is less informal when they are intermediated by BANs, it relates also to the fact that the majority of BANs are relatively young and therefore have not yet existed long enough to meaningfully be evaluated (Collewaert et al., 2010). Because of the complex nature of the activities of BANs, even if we had more adequate data a number of rather severe problems in estimating the total costs and benefits for society of BANs would still remain.

5.2 Opportunity costs of policy intervention

Even if it could be established that there are positive socio-economic returns from investing in BANs governments must also consider if the financial costs involved would have been better used on alternative purposes. A side effect of a heavy government involvement may be that it creates an inexpedient expectation in the market to continuation of the support/subsidies.

A long-standing discussion related to public intervention is if government initiatives crowd-out private investments. Regarding these introduction services there is evidence (Mason and Harrison, 1997, Lange et al., 2003, Leleux and Surmont, 2003) suggesting that private and publicly supported angel networks target different segments of the market and serve a different function, which limit the risk of this crowding-out effect. Contrary, these types of networks may generate societal benefits that potentially justify public support. These benefits may be sub-divided into direct and indirect effects.

5.3 Direct effects of business angel networks

As mentioned, the functions of BANs relate to alleviating informational constraints, which in turn facilitate investments. Thereby BANs help create jobs and growth and, according to existing evaluations, for a relatively small amount of subsidy (Mason and Harrison, 1999, Harrison and Mason, 1996, Collewaert et al., 2010). Whereas government programmes generally are often subject to dead weight, that is, support of activities that would have been undertaken regardless of the support, research shows that initiatives supporting the functioning of the informal venture capital market are unlikely to suffer from dead-weight effects (Mason and Harrison, 1996, 1999). Likewise, displacement effects, the redirection of activity from equivalent or otherwise economically beneficial activities, are also likely to be low (*ibid.*). This is because informal investments often stems from a pool of capital, which was otherwise used for consumption or placed passively in financial assets, e.g. bonds.

5.4 Indirect effects of networks

It was mentioned above that there is increasing awareness in evaluation studies of 'behavioural additionality' (Georghiou et al., 2004, OECD. 2006). This enduring effect on behaviour of agents is an important indirect effect of BANs.

Empirically, the indirect effects of BANs are somewhat difficult to get hold of as they are less tangible and measurable, as well as not clearly defined in terms of the boundaries of the effects. One indirect effect is that business angel networks may act as 'hubs' in the market (Christensen, 2008, Paul and Whittam, 2010). Generally, business angel financing

is often a gateway to other types of financing - bank financing, government support programmes and other equity investments (Mason and Harrison, 1995, Mason and Sackett, 1996).

Related, business services and financial institutions may also become more aware of the market structure and get better equipped for acting as intermediaries as a result of the activities of BANs. This effect is particularly important in markets such as this where visibility and information is limited, and where the actors in the market express difficulties navigating. It is, though, related to business angels as such, not necessarily the angel networks.

Another 'hub'-function is that BANs provide information that facilitates a more efficient screening of projects looking for capital. The network does not necessarily optimise the number of financed projects, rather the increased efficiency in the exclusion of bad projects is an important societal benefit of a BAN. Moreover, the experience entrepreneurs get from engaging with business angels such as presenting their business plan and getting feedback may be beneficial in other contexts as entrepreneurs often look for other financing sources if rejected by business angels.

Entrepreneurs generally have a low level of awareness about the supply of equity financing, in particular with respect to formal and informal venture capital (Aernoudt et al., 2007). BANs contribute to raising such awareness of this type of financing both among entrepreneurs and their advisors. Despite the importance of this effect it is often omitted in evaluations as it is very difficult to measure with any precision.

Other types of policy intervention that rely on market transparency and connectivity may also benefit from the effects on improved information level on the equity market provided through BANs. This effect was e.g. found in a study of a number of Danish networks for innovation (DamVad, 2011).

Although often overlooked, the social infrastructure that BANs provide is an important factor in the way in which they benefit the wider system. Angels use the formal networks to establish contacts and get to know other angels professionally and socially, which in turn may

provide an important formation of trust, which is a platform for future business and collaboration. The trust creating effect of policy schemes has been found to be important (McCahery and Vermeulen, 2010, Harrison et al., 1997). Whereas this may be done in other contexts as well, the BAN provides a meeting place that would generally not exist in the market. In addition to the social, informal exchange of ideas and interests the possibilities for mutual learning and syndication is another attraction of BANs. In a number of cases BANs (including DBAN) even have training programmes for business angels (European Commission, 2002, Gullander and Napier, 2003, Sohl, 2007, OECD, 2011). There is now increasing focus upon these functions of BANs replacing the traditional perception of BANs as performing a pure matching function⁷.

BANs also perform a co-ordinating and infrastructural function through developing standards for legal documents; implementing code of conduct standards, providing guidance on questions such as tax problems etc. Together these functions contribute to minimising aggregate transaction costs in society.

From a social point of view it is an important function of a BAN to continuously update and work with developing the BAN and business model as such. This may be done by benchmarking different matchmaking methods (physical, virtual, Internet, events etc.), systematic learning from experience from abroad, and exploring different ways of marketing the network. To facilitate this learning process a monitoring system of adequate indicators on the performance of the BAN may be established.

Compared with using only pure measurable effects incorporating the above, broad functions of a BAN may render a different assessment of such initiatives. An ordinary evaluation would probably mainly count the number of investments made through the network, the number of jobs created, and perhaps also the number of investors registered. However, in a broader perspective it is equally important to count other important variables for example

⁷ EBAN (2008) find that investment meetings and other matching activities are still clearly the most important activities of BANs but according to a survey among their members 'Training in investment readiness for SMEs' and 'Training and capacity building for investors' are now done by respectively 38% and 45% of angel networks.

the number of projects that have been screened but not financed; the increased awareness; the learning effects and the reduced transaction costs in society.

In sum, the direct and indirect effects and their related indicators include those in table 1. In some cases it is difficult to point to concrete indicators illustrating the difficulties in measuring all the effects of networks.

Table 1: Direct and indirect effects of BANs. Indicators.

Direct effects	Indicators	Indirect effects	Indicators
Employment and Investments	Jobs created	Increased awareness	Articles, meetings
	Number of investments	Screening of projects	Number of presentations and due diligences
	Amount of invested capital	Behavioural changes	
Network-/institutional effects	Number of sub-networks	Upgrading of competences	
	Number of matches made	Syndication and network development	Number of syndicated investments.
	Number of angels registered	Leverage additional capital	Financing from other sources
	Number of firms registered	Regional distribution of capital	Investments in peripheral areas
		Lower transaction costs	
		Increased information increases effectiveness of other programmes and business services	

In most ordinary evaluations the scope of criteria are limited to those in the 'Direct effects' column. The indicators related to these effects are obviously also those most easily measured. It is argued here, though, that they are far too narrow for a complete assessment of a

BAN. The following story of what were activities in DBAN and how did it evolve illustrates that relying on these easily measured metrics for evaluation may have inexpedient and negative outcomes.

6. How DBAN evolved, declined and was evaluated

6.1 Ex-ante assessment – needs, scaling, resources, objectives, actors and stakeholders.

Inspired by an increased attention across Europe to the potentials in informal venture capital, and by a book on the business angel market in Denmark (Christensen, 1998) a feasibility study on the possible implementation of a business angel network in Denmark was commissioned and done by Deloitte & Touche (2000) on behalf of the Ministry of Industry. The study concluded that substantial amounts of entrepreneurial finance and competences could be mobilised through business angels. A hindrance to realizing these resources was identified in the lack of information channels.

As a part of this feasibility study potential users were surveyed regarding their view on the usefulness of a possible BAN. Both entrepreneurs and angels viewed an establishment of a BAN positively. The report furthermore concluded that a BAN could not be established without the initiative and support from government. In 2000 The Danish Growth Fund, a government funded investment company, was supplied EURO 700.000 for a 2-year period to establish Danish Business Angel Network (DBAN). The Danish Growth Fund provided office facilities to host the two person staff and the secretariat.

6.2 Activities

6.2.1. Information

DBAN saw it self as an important part in providing information to the market and helping out the information gap often referred to at business angel markets. Relatively many financial resources, more than 200.000 Euro, were put into establishing an electronic, web-based matchmaking site with the objective of bridging angels and firms looking for investors.

A number of meetings were held where entrepreneurs presented investment proposals for a panel of angels. This is a typical activity for business angel networks. The meetings were followed by drinks and food and an opportunity to network. According to the angels the meetings themselves were not very productive in terms of generating investments, but they fulfilled a function in bringing the angels together.

6.2.2. Networking and training

The management of DBAN were well aware of the importance in creating a basis for angels to get to know each other and to exchange experiences. The huge heterogeneity of the angels connected to the network also meant that some of them needed basic training in assessing investment proposals and guiding potential investee firms. Several initiatives were taken along these lines. A social ('study-') tour to New York was supported financially and room for networking was always part of events. A competence building day was also initiated. The co-location with The Danish Growth Fund should ideally have resulted in synergies and also signal that the business angels market is an important part of the total venture market. However, the full benefits of this co-location were never reaped.

6.2.3. Awareness raising and hub-function

The network managed to create substantial attention in the broader business community and press. 150 articles were published in newspapers and road shows to key actors took place regularly. A handful of key angels were very active in promoting the networks and in helping out the management of DBAN to navigate in the financial community, present the initiative and establish contacts. DBAN was exposed in the magazines and other material from The Danish Growth Fund. Two large national conferences and several seminars were arranged, which contributed to raising awareness about business angels as a financing option. This awareness was not only among firms. In addition, intermediaries such as consultants, accountants, lawyers became interested in DBAN. The attention also contributed to showing business angels the benefits of a central, coordinating entity. Through the broad range of activities the DBAN was gradually considered a node for business angels with regional branches initiated and supported by DBAN.

These activities resulted in a much higher general awareness of business angels in Denmark. Moreover, business angels found that they are not alone and saw possibilities to increase competences, use standardised contracts and similar facilities. Finally, they recognized that DBAN could act as a messenger regarding articulating interests to the political system⁸.

6.2.4. The investments and angels

Relatively early in the start of the network a large number of business angels were interested in joining the network. Unexpectedly, no less than 300 angels were responding to advertisements for recruiting angels. A search and selection bureau was hired to screen applicants doing 120 interviews. Screening criteria were that angels should be experienced through start-up or management, should have financial resources to invest, and express willingness to invest a minimum of ½ million DKK (80.000 Euro) a year through the network. 67 angels were selected to create 5 networks (Vaekstfonden, 2002). The start-up costs for each network amounted to around 40.000 Euro (ibid.).

Investments were made by angels registered with the BAN, in fact there was early on investments of 10 million DKK (1½ mill.Euro) in 8 different firms (Vaekstfonden, 2002). This, together with a positive start of the other activities of the network created an optimism around the future effects of the network. DBAN mobilised 200 business angels, and the good start made the management set up further regional and sectoral oriented sub-BANs. These included a BioBan focused upon biotechnology, creative industries BAN, Agro BAN, a succession BAN, a London-residents BAN, and an IT BAN. Only the BioBan really got going. The expansion of regional and sectoral BANs ended as plans only. Likewise the investment level was far from those of the start of the network. It was not that investments did not take place at all. However, the number of investments made through the network decreased substantially because the angels had established relationships and did not need the network as a node for investments. Much of the activities, according to interviews with angels 80-90%, took place outside the network, even if they were initially facilitated by the network.

⁸ One example of this is that a report was commissioned that compared taxation of business angels in Denmark, Sweden, and the UK. The a priori assumption was that Danish taxation system was hindering business angel investments compared to the system in the UK. The report did not find such a conclusion and was not used in subsequent lobbying.

6.3 Government evaluation – criteria and monitoring

The head start of investments made the Vaekstfonden project that as soon as the networks get momentum they would by 2005, after three years, facilitate investments of 150 million DKK yearly (Vaekstfonden, 2002). This was clearly an over-optimistic view. There was a lot of focus on investments as this was the overarching emphasis with the Ministry. Although it was recognised in Vaekstfonden that indirect effects were also in play, in particular transfer of competences and increased awareness, the reporting was therefore focused upon investments made.

Another requirement was that the networks should be self-supporting after some time. The funding should come from membership fees and matching fees when investments were done. This requirement meant that angels had reduced incentives to make investments through the networks; rather they were inclined to do business together outside the formal networks. Over the evolution of DBAN and even from the start there was an on-going discussion on the funding from government. The Ministry was reluctant to support the DBAN activities on a long term basis.

There was also a lack of understanding with the government regarding how BANs work and what they realistically could be expected to achieve in a short-term period. In the status reports and other communications the requirements were focused upon easily measurable parameters like the number of investments made, number of introductions, and number of networks created. Indirect effects as explained above were heavily underestimated and under-valued by ministry civil servants and neither emphasized very much by DBAN management. As mentioned, the expectations of what could be achieved in terms of investments were highly optimistic.

Government did not regard their support of DBAN as an investment in the general small business infrastructure. During the life of DBAN financial support was on more than one occasion close to being terminated. The DBAN staff, DBAN Advisory Board, and selected, active angels argued that BANs need time to take off, and that many of the benefits are not 'hard' facts, rather community building, awareness raising, mobilising angels etc. These ar-

guments were supported by e.g. EBAN (1998) who estimates that a for-profit BAN needs 8 years to break-even. Until then government co-financing is necessary as also argued by European Commission (2002). Nevertheless, the dominant thinking in terms of (traditional) evaluation focused upon short-term direct, measurable effects that was over-shadowing attempts to incorporate broader effects.

The network was in spring 2004 re-organised and despite protests from angels included in the Danish Venture Capital Association (DVCA). In return DVCA received the rest of the ministry grant for DBAN 200.000 Euro in 2004 and 110.000 in 2005. The official argument for including DBAN in DVCA was to facilitate synergy between business angels and institutional venture capital. In practice it was a reflection of a decision to let the network die.

The BAN activities under the auspices of DVCA from 2005 have been limited. The DVCA web page links to web pages of 3 of the regional networks that still have some, limited activity. The other regional networks and sector specific networks are no longer active. There are no community-building activities or other typical BAN activities as mentioned above. In practice, the DBAN has ceased to exist with the withdrawal of government involvement. It was investigated if there was any chance to continue DBAN on a private, for-profit basis. However, after one month of making and testing a business plan for such a continuation of the network it was concluded that it was not feasible.

The running and establishment of DBAN took up substantial financial resources. In total the investments amounted to approximately Euro 1.320.000. Assessed against the limited number of investments made through the network it is tempting to evaluate it as unsuccessful.

6.4 Alternative evaluation

According to Mason and Harrison (1993) there are three pre-conditions for the successful establishment and growth of a BAN: high visibility and credibility through on-going marketing is needed to build a critical mass of investors and investment opportunities; it must be well resourced; and thirdly a hands-on and pro-active approach is needed. These preconditions were to a large extent met in the DBAN. Nevertheless, the initiative has not been a

success if judged by the usual evaluation metrics, e.g. in terms of the number of investments through DBAN. Although the few regional networks that do continue today include some of the activities that were initiated during the DBAN period, the coordinating, national function is no longer there. DBAN was closed down before the potential had a chance to unfold.

DBAN tried to do many, perhaps too many things. DBAN put a lot of effort into some formal structures such as the electronic meeting place, whereas the angels wanted the informal structures and saw DBAN as a social meeting place that served an important function in aligning angels and creating opportunities for syndications and exchange of experiences. Although it may be argued that it is not a task for government intervention to support social meeting places the social environment and trust among the parties is often an important prerequisite for networks to function adequately. The importance of this aspect was not neglected but under-estimated both by DBAN management and the government and back-funders.

As this is a network that makes up a significant contribution to connectivity in the capital market, a comprehensive evaluation has to take into account a broader set of criteria as shown above. Thus, surely DBAN contributed to important aspects like increased awareness among actors in the capital market, which in turn facilitates higher connectivity and alleviates informational deficiencies in the market (Harding, 2002). Other of the indirect effects mentioned in table 1 were clearly not provided had DBAN not existed. Seen in a system level perspective the DBAN may well have been worthwhile. Despite the fact that parts of the investments were not paying off by any standard (e.g. electronic market place) the investment did, though, increase capital market efficiency. Evaluating in this manner would probably change the negative perception. On the other hand, hard evidence to support this assertion is difficult to establish. As mentioned in section 4 system level evaluations are inherently less precise, more focused upon the learning processes and flows of information than the static, measurable parameters demanded in DBAN-reports to the Ministry. There was no understanding of this, even if it was persistently pointed out from DBAN Board what are the broader effects of BAN.

7. Conclusions

The scope and character of criteria used for evaluation has a huge impact on the resulting assessment. Despite growing importance and focus upon networks in innovation and innovation policy our knowledge on how to assess networks is limited. The majority of evaluations of networks use methodologies and metrics from standard evaluations. Using the case of Business Angels Networks this paper contributed with a broader view on what criteria to apply when evaluating angel networks. It is well-known in recent evaluation literature that innovation policies and specifically network policies may have indirect effects. However, the literature has been relatively silent in explaining in detail what these effects are. The paper contributed to a specification of these indirect effects.

Although a single case was used the principle discussion may apply to other areas than capital markets. There has been an extensive support to enhance collaboration between firms across Europe for two decades. Evaluations may measure effects on economic or innovative performance and to some extent transfer of knowledge. But they may underestimate indirect, hard to measure effects such as transfer of tacit knowledge, reputation effects, long-term benefits from networking, the training effects in increased abilities to select and manage collaboration projects, and the general increase in connectivity of the innovation system. Recognition of the complicated and complex nature of network policies is essential.

Adding a dynamic dimension to these different perspectives naturally complicates matters further. For example, an increased awareness about opportunities for business angel financing as a result of marketing from a BAN is likely to increase the deal flow for business angels even outside the BAN. In turn this means that business angels have less need for BAN, which limits the incentives for government to support the BAN. These complications should, though, not prevent the instalment of thorough, well-thought evaluations. Ideally criteria for evaluating BAN should change over time along increased specialisation and development of the venture capital market. In the DBAN case traditional metrics were upheld in the whole period, and the time horizon for potential effects was under-estimated. Not only is

there a need for more nuanced evaluations and evaluation criteria, also openness to adjusting these in accordance with the market development is necessary.

Admittedly, evaluations of networks are faced with challenges that are enhanced when network policies aim at stimulating innovations. To still larger extent effects of innovation policies involves soft factors such as learning, attitudes towards collaboration, abilities to use networks, and innovative behaviour. Awareness among governments on these potential positive side-effects is important to a comprehensive assessment of policy initiatives and generally to policy learning. Awareness is, however, not enough. The implementation of new evaluation approaches and adoption of broader evaluation metrics is likely to meet resistance not only among policy evaluators but more so among policy makers who, despite being interested in broader effects of policy, most often demand specific measures.

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