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INNO LEARNING PLATFORM

New or better support mechanisms: Initial exploration and discussion of selected delivery mechanisms

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Table of Contents

Executive Summary 3
1 Introduction 5
2 Relevant new measures 6
2.1 Lessons from the theory: academic and policy studies 6
2.1.1 Academic studies 6
2.1.2 Policy studies 6
2.2 Lessons from policy trends 8
2.2.1 Overview of the population of measures studied 8
2.2.2 What are the best countries doing? 8
2.2.3 How are they doing it? 10
2.3 Adding value to these general lessons 11
3 Delivery mechanisms of three selected measures 12
3.1 Clusters 12
3.1.1 History and overview 12
3.1.2 Rationale of the measure 13
3.1.3 Basic features of the measure (type of support, beneficiaries, selection criteria, budget, targets) 13
3.1.4 Evolution of the measure: how do the basic features change over time and why? (why may be difficult to answer) 18
3.1.5 Decisive features for success (are they are context-specific?) 20
3.1.6 Lessons from evaluations 21
3.1.7 Specific circumstances in which they are recommended 21
3.1.8 Some recommendations 22
3.2 Innovation Vouchers 23
3.2.1 History and overview 23
3.2.2 Rationale of the measure 24
3.2.3 Basic features of the measure 24
3.2.4 Evolution of the measure 26
3.2.5 Evaluations: lessons about the effectiveness or efficiency of the mechanism 27
3.2.6 Conclusions and recommendations 28
3.3 Gazelles: supporting rapidly growing companies 29
3.3.1 History and overview 29
3.3.2 Rationale of the measure(s) to support gazelles 31
3.3.3 Basic features of the measure(s) addressing gazelles 32
3.3.4 Specific measures: basic features and evolution 37
3.3.5 What are the decisive features for success (and are they are context-specific)? 40
3.3.6 Have any of these measures been evaluated? 40
3.3.7 Specific circumstances 41
3.3.8 Conclusions and recommendations 41
References 43
Appendix 1: Novel measures of interest in well-performing countries 45

Executive Summary

The purpose of this mini-study is to identify trends of recently adopted innovation measures and to study the delivery mechanisms of three particular types of measures, which, based on expert advice and the Commission's views, appear promising and worth investigating further: clusters, innovation vouchers and support tailor-made to the needs of rapidly growing companies, known as gazelles.

Academic studies and evidence from policy making suggest that successful innovation measures need to generate spillovers, be adopted by all countries and regions, address all actors, and last but not least, utilise good governance so as to be efficient and effective. In this context, the best-performing countries of the EU reshape their policy mix constantly. In the last five years, the number of new measures compared to the total number ranges from 10% in Ireland, a relatively limited renewal, to 74% in Italy. On average, 36% of the measures adopted in the 13 countries were adopted after 2004. The highest share of measures is still concentrated in types of intervention well known from the past. There is a clear emerging trend of emphasis in the priority areas of environment, energy and quality of life. Although these are important areas for intervention, they are often treated by specified sectoral policies and in that sense they are not studied in more detail in the context of 'new or better measures for innovation'. Those that are of high interest are set out below.

- Measures addressing *clusters in a more specific and sophisticated way* refer to very targeted ways of structuring the cluster (addressing Mega-clusters of 35 actors), focusing on the most relevant new topic (environmental clusters), putting specific actors in the core of the cluster (big enterprises), using specific legal forms (binding legal structures like joint ventures) or trying to make more intelligent and refined choices.
- Measures trying to build effective bridges between basic and applied research through specific measures or through a better incentive scheme for motivating research organisations to cooperate with the business sector.
- Measures addressing *actors that are usually more difficult to approach*, such as first-time innovators (Innovation Vouchers) or subsidiaries of multinationals (Attracting technology from headquarters).
- Measures addressing new areas or topics by putting more emphasis on the support of social sciences.
- Measures supporting user-driven innovation by using public procurement, society and small business innovation research (SBIR)-type measures.
- The mechanism of awards is increasingly used to promote efficiency.

The delivery mechanisms of the most widespread measures in this category evolve as follows, suggesting some interesting policy lessons for the future.

1. **Cluster policy** should not aim at creating clusters, but at activating them. It is a long-term activity so public support should be provided for an extended period of time, at least five years or more. There is a need for sufficient resources to run a long-term strategy without having to constantly seek further funding. Both national and regional policy makers should provide in-process support to the clusters in which they intervene. Examples of this are training for cluster managers, evaluations and assessments, cross-fertilisation of clusters, etc. Clusters are well suited to all countries and regions in the EU, however, it seems that the more advanced countries recognise the need (and feasibility) for Mega-Clusters as a more promising and effective intervention. For the transition economies, the industrial 'buy-in' is even more important than elsewhere in order to establish trust among stakeholders.

2. **Innovation vouchers** are a measure increasingly adopted at national and regional level; they are considered an appropriate policy instrument to support small- to medium-sized enterprises (SMEs) in their innovation activities in order to overcome coordination barriers and increase interaction between SMEs and public and private knowledge providers. SMEs benefiting from innovation vouchers schemes are satisfied provided that the implementation process runs smoothly. The role of research and development (R&D) institutions is crucial in this regard. Policy makers wishing to implement the scheme are recommended to keep the entry threshold for SMEs as low as possible, so as to avoid lessening SMEs' interest in vouchers and to keep the overall administrative burden low. A compulsory contribution of the SME might be recommended to ensure some value added resulting from the innovative project. The role of intermediary organisations in providing broader support to SMEs in the use of vouchers, although limited, proved to be successful, hence intermediaries' contribution to strengthening the effect of vouchers should be investigated.

3. Finally, as far as **gazelles** are concerned, countries with a favourable macroeconomic environment are advised to adopt measures that specifically address the needs of the growth phase of companies; generic measures are not enough — they may even prove counterproductive. It is, however, unlikely that such measures can succeed in smaller countries (markets) or in less competitive ones unless they are combined with strong export orientation. For such measures, the eligibility criteria are a crucial element of discouragement, however a variety of solutions are available: they can be either subjective (based upon company declaration and business plan) or based on any kind of objective measures (targeted turnover, past growth trends). What should be avoided are general public perceptions as these are most likely to lead to 'picking winner' policies with negative consequences for the competitive climate. Measures addressing gazelles should primarily target whatever is associated with skill hiring or creation, including both entrepreneurial and technical skills. Measures addressing gazelles should support all kinds of interaction: with foreign markets (internationalisation), with capital providers (business angels, venture capitalists, banks), and among themselves. At European level, prestigious awards can be created but more importantly a study is needed to examine the costs and benefits of specific tax schemes rewarding *ex post* companies that showed spectacular growth in the past. Such a scheme has not been identified among the measures studied. When designing measures to support gazelles it is crucial to avoid two inherent dangers: diverting attention from the real needs of growth and consolidation by adopting measures that are too general (benefiting all SMEs) and neglecting the *scale-up* phase, and government failure in an *ex ante* 'picking winners'-type measure, which will end up with negative effects on competition and horizontal measures distorting entrepreneurial rewards in the market.

1 Introduction

The purpose of this mini-study is twofold, and aims for the following.

1. Identify new types of innovation measures, which appear both new and promising. This identification is based on a combined exploration of theoretical issues and a systematic search of the PRO INNO Trendchart (TC) database.
2. Study the delivery mechanisms of three particular types of measures, which, based on expert advice and the Commission's views, appear promising and worth investigating further.

The whole exercise is limited to measures supporting business innovation and not extending to the relevance of the broader context: good regulation, more and better skills, as well as an innovative public sector. They are well known as prerequisites for an innovation-enabling environment for companies, but are not discussed here.

Business innovation has emerged as a key element of policy agendas in the post-war years. All current economic theories point out that the adaptation of production to new knowledge becomes a crucial factor for maintaining and improving competitiveness, and thus wealth. But there is no guarantee of a positive correlation between increases in public support to innovation and higher income or better services. Innovation policy measures do not lead *ipso facto* to better products or processes. How this is done and under which conditions (in a rapidly changing environment) is a matter of investigation: both scholars and enlightened practitioners have studied and experimented with policy measures to find out how appropriate and how context specific they are.

So, after a few decades of systematic science and innovation policy, a significant number of innovation policy measures are operational[1], and there is an increasing number of conceptual and empirical work ongoing in the attempt to assess their role. However, to date there is no comprehensive cost-benefit analysis, which could lead to a set of tailor-made policy mixes that could be picked up and serve as the innovation policy menu for every type of environment and issue. Innovation is a social process, reacting to a very complex set of parameters; hence, the attribution of an impact to single factors or interventions is practically impossible. In other words, how measures or groups of measures supporting innovation evolve over time in Europe and beyond is not subject to systematic scrutiny and selection by policy makers. This may be part of the reason, but it is also path-dependent. Policy makers often follow conventional wisdom and/or imitate whatever is closer in either cultural or geographical terms. This is a risky approach, as it does not take the frequent changes of the environment into consideration.

Hence, since it is not possible to get an 'exact science' analysis of measures in this paper, we will draw some basic ideas from economic theory, analyse existing evidence and finally discuss three types of measures selected because all recent policy discussions point towards their increasing relevance and evolving delivery mechanisms. They are measures trying to promote the following: clusters, innovation vouchers and gazelles.

[1] The INNO-Policy TrendChart Database currently identifies more than 400 horizontal and specific measures in support of innovation, including measures supporting technology transfer, incubation, and access to finance.

2 Relevant new measures

2.1 Lessons from the theory: academic and policy studies

2.1.1 Academic studies

From the linear model of innovation to current interactive models, emphasis shifts from market failure to systemic failure, from supply to demand, from the state to the region, and then to an effort to design complementary policies at different appropriate levels: European, national and regional. The assumed linearity of the innovation process has proved to be not only optimistic but also overly simplistic and not corresponding to reality. So, as such it was universally rejected in the 1980s. *Individual company subsidies were the first set of measures recommended and applied*. Further insights then suggested that diffusion and spill-overs are the mechanisms that link R&D with growth, and that if the research results are not spread around the economy, then public support for research becomes meaningless. As a consequence of this, technology diffusion policies developed to combat market failure in the process of diffusion and transfer. *Technology parks, incubators and all kinds of intermediaries were the second set organised*.

More recent studies suggested that the diffusion of knowledge could only be effective if organised as an *interactive system, which* many countries lack. Technology and innovation are not created in isolated organisations but in *favourable environments*, where competent organisations and skilled individuals interact in a constructive and complementary way to assimilate existing knowledge and generate new ideas, products and production processes.

The present situation is characterised by the proliferation of the *model of open innovation,* whereby innovation does not occur in isolation but through interaction. Hence, companies need to work in an open environment together with suppliers, customers, research organisations, intermediaries and even competitors to create and implement new ideas. This has extensive impacts on policy, as set out below.

1. Support for innovation is only justified if social returns on investment exceed private returns. To achieve this, it is crucial to generate spillovers, and this leads to a preference for systemic interventions rather than individual companies.

2. Under the present circumstances of globalisation and the subsequent increasing competitive pressures, innovation needs to become pervasive and be adopted by all actors and societies. Not only advanced or only lagging countries need intervention.

3. Finally, evaluations and econometric work have identified differentiated responses to public intervention; hence policies are not always effective and efficient, and they need to be well designed and evaluated. Issues of governance become relevant.

2.1.2 Policy studies

In addition to academic studies, a broad range of policy studies (such as the broader INNO-GRIPS and INNO-Views projects, but also individual studies commissioned by the European Commission or Member States) enrich empirical evidence and identify trends based on the study of specific instruments.

Starting with recent evidence from the EIS, there are two suggestions for directions to consider, as pointed out in one of the Commission's documents, and noted below.

1. '[The] challenge is to provide innovation support services more efficiently[:] that means less bureaucratic and in a more customised manner. New and better forms of service delivery can be observed all over Europe, challenging traditional innovation support mechanisms. For example, a trend towards more integrated and customised services provision, such as innovation vouchers, can currently be observed, as well as increased efforts to [proactively approach] enterprises with high growth potential. Cluster organisations increasingly offer new channels of innovation support, by 'privatising' services that were previously offered by innovation agencies or Chambers of Commerce.'

2. 'Furthermore, a higher degree of selectivity can be observed. Incubation programs offer different kind of services to start-ups, depending on their economic prospects. Innovative SMEs that have greater potential to grow faster (the so-called 'gazelles') often receive more attention, by providing them with increased incentives and new tools designed to address their specific needs.'

Lessons from INNO-Grips also give some guidance on the subject. INNO-GRIPS is intended to supply a single, unified framework for innovation intelligence, to explore challenging questions in the area of innovation and to make a significant contribution to the improvement of the regulatory and administrative environment for innovation in Europe and to the coherent development of innovation policies. In this form, it contributes towards building an 'early-warning' system for policy-makers to facilitate the timely adoption of appropriate policy responses.

INNO-GRIP suggests the following topics.

1. Society Driven Innovation: Governments have long attempted to promote innovation. They have done this explicitly to meet perceived societal needs, such as defence and security, as well as more standard economic ones such as that of supporting trade. With the growth of welfare states, many governments have established initiatives in such fields as health, hygiene and sanitation, and more widely in such areas as societal cohesion and social inclusion.
2. The importance of gazelles, with a study aiming to achieve a better understanding of what they and their representative organisations want and need to help them achieve their objectives. The study raised a number of important issues, addressing the mechanisms of success and policy supporting them.
3. Skills for innovation, based on a mini-study trying to link the skills and innovation domains — these two themes have rarely been connected systematically in studies.
4. Hidden Innovation in the Creative Sectors: looking into the nature of innovation in the creative sectors of the economy and suggesting the idea of the relevance of non-technological innovation.

Finally, looking into the recently published UK's Department for Innovation, Universities and Skills (DIUS) *Innovation Natio,* it appears that areas to be addressed are:

- innovation vouchers;
- demand-driven innovation;
- service industries, creative industries and non-technological innovation;
- also, as a novel measure with limited applicability, 'supporting SMEs to better report their intangible assets'.

2.2 Lessons from policy trends

2.2.1 Overview of the population of measures studied

On their side, policy makers cannot wait for the 'perfect recommendations' as they need to act rapidly, even with imperfect knowledge, if necessary. They have adopted a large number of measures promoting innovation in the last decades partly by reacting to academic results, partly by imitating and partly by improvising and experimenting. This was the case first in the more competitive economies of the EU, but then, following the pressure of regional development policy, it was seen also in southern countries and eventually in the central and eastern European countries (CEECs). As they recognise that the generation, adoption and diffusion of new technologies is a complex process, they try to learn from experience, and sometimes venture into new schemes. Experience shows that there are two ways in which policy makers more often select what kind of measures to adopt.

1. Measures they copy from other countries, either those that have become conventional wisdom, and in particular those that have been previously adopted by their geographical and cultural neighbours (TC *Synthesis Report 2007*).
2. The continuity trend. There is a reluctance to give up measures that have worked for a long time partly out of inertia and partly because there is a regular 'clientele' lobbying to maintain them. Hence, it is no surprise that altogether, technology-oriented innovation support mechanisms (justified by earlier models) still represent about 75% of the current actions in support of innovation (European Commission, 2008).

Neither is sufficient guarantee for success. It reflects an easy and definitely risk-free way of approaching policy. An alternative to these more conventional methods is to take initiatives: from a database of measures, to examine more selectively those with the following characteristics.

1. Are adopted by countries with good governance or countries with the most successful performance in terms of international competition. These are likely to be the most efficient ones. In this case, it is crucial to adopt measures that were successful in countries with somewhat close structural characteristics, so that transferability is feasible.
2. Are novel, as these are likely to be those responding to most recent challenges!

2.2.2 What are the best countries doing?

As the target of the mini-study was to identify 'new' or 'improved' delivery mechanisms, measures from the PRO INNO TC database ([2]) are studied below as evidence of what new measures are adopted.

Evidence from the European Innovation Scoreboard (EIS), TC syntheses and all international benchmarking studies indicate that the leading countries in both policy and performance are the Nordic countries, the Netherlands, Switzerland and the UK. But a number of other countries present particularly interesting features, either in terms of progress or in specific areas: Germany, France and Austria have made a special effort in innovation policy, Ireland has increased its economic performance remarkably and Italy is the cradle of clustering activities. Because of its special performance in high-tech, Israel is studied as well. In order to identify recent trends, measures adopted by these countries since 2004 were systematically studied. The last four years appear to serve as a reasonable time horizon for studying novelty, because there are no measures introduced in 2008 in the database.

[2] See www.proinno-europe.eu/index.cfm?fuseaction=page.display&topicID=262&parentID=52 online.

Table 1 shows the results of the initial search: there are 119 measures adopted after 2004 in the well-performing countries, while there is a total of 335 measures introduced by all 33 countries in the same period. Some interesting general features have been noted below.

- There is a very different number of total policy measures in the countries studied, ranging from 14 in Israel to 55 in Austria. There is no clear connection to the size, wealth or any other type of variable in a country and the number of measures adopted.
- Countries vary also considerably in their degree of novelty: the number of new measures compared to the total number ranges from 10% in Ireland, a relatively limited renewal, to 74% in Italy. On average, 36% of the measures adopted in the 13 countries were adopted after 2004.
- Of all the new measures introduced after 2004, the countries studied are responsible for approximately one third, with the leaders in terms of numbers being Italy, Switzerland, Austria, Sweden, France and Denmark.

Table 1: New measures in the top performing countries

	2004	2005	2006	2007	2008	2004-2008	Total	% 2004-08 to total
Austria	11	1	-	-	-	12	55	21,82
Denmark	3	1	3	4	-	11	20	55,00
Finland	5	2	-	-	-	7	22	31,82
France	4	5	3	-	-	12	31	38,71
Germany	2	1	1	3	-	7	27	25,93
Ireland	1	2	-	-	-	3	31	9,68
Israel	-	3	2	1	-	6	14	42,86
Italy	2	7	5	-	-	14	19	73,68
Netherlands	6	-	4	1	-	11	18	61,11
Norway	2	1	2	1	-	6	23	26,09
Sweden	1	6	4	1	-	12	18	66,67
Switzerland	7	3	1	2	-	13	21	61,90
UK	2	2	1	-	-	5	36	13,89
Total	46	34	26	13	-	119	335	
All measures on database for all countries	130	80	97	54	-	361		

Key: * These are the countries included in the PRO INNO database.

Once this exercise was completed, the 119 new measures were examined in detail, to identify to what extent they constitute routine measures or whether they correspond with the ideas about good practices above: target a variety of actors and externalities, be likely to be efficient and effective, and reflect the areas identified as forward-looking by recent policy papers, as indicated above. This produced the following picture.

- The highest share of measures is still concentrated in types of intervention well known from the past. They focus on capacity building, promoting international cooperation, supporting companies, regions and the development of human capital for research and innovation (including gender and age-specific support).
- Even among the selected high performers, many Member States are simply 'catching up' in the sense that they are introducing measures that were not adopted in their territory in the past, although they were frequently encountered elsewhere (e.g. tax incentives), or they are simplifying and improving the administrative part of long-existing incentives.
- There is a clear emerging trend of emphasis in the priority areas of environment, energy and quality of life. Although these are important areas for intervention they are often dealt with by specified sectoral policies and in that sense they are not studied in more detail in the context of 'new or better measures for innovation'.

Putting these traditional, catching-up or out-of-scope novel measures, the set of measures was studied that seems novel, interesting, complying with the general criteria and/or falling under the categories suggested by the study of policy analysis. This has produced the following picture.

Table 2: Interesting new measures in the top performing countries

Country	No	Description
Austria	2	AT 66, AT 87
Denmark	4	DK 19, 30, 33, 35
Finland	1	FI 27
France	4	FR 61, 63, 65, 66
Germany	2	DE 77, 80
Ireland	-	-
Israel	1	IL 19
Italy	2	IT 44, 65
Netherlands	5	NL 47, 51 ,49, 50, 53
Norway	1	NO 2
Sweden	2	SW 32, 61
Switzerland	1	CH 10
UK	1	UK 73

These interesting novel measures are hereafter grouped into distinct categories.

2.2.3 How are they doing it?

The novel measures categorised into ad hoc groups appear in Appendix 1. Taking their content into consideration, the following comments may be noted.

1. Measures addressing *clusters in a more specific and sophisticated way* refer to a very targeted way of structuring the cluster (addressing Mega-clusters of 35 actors), focusing on the most relevant new topic (environmental clusters), putting specific actors in the core of the cluster (big enterprises), using specific legal forms (binding legal structures like joint-ventures) or trying to make more intelligent and refined choices.
2. Measures trying to build effective bridges between basic and applied research through specific measures or through a better incentive scheme for motivating research organisations to cooperate with the business sector.

3. Measures addressing *actors that are usually more difficult to approach*, such as first-time innovators (Innovation Vouchers), subsidiaries of multinationals (Attracting technology from headquarters).
4. Measures *addressing new areas or topics* by putting more emphasis on the support of social sciences.
5. Measures supporting user-driven innovation by using public procurement, society and SBIR-type measures.
6. The mechanism of awards is increasingly used to promote efficiency.

2.3 Adding value to these general lessons

As indicated in the introduction, individual measures cannot be assigned generalised success (or failure). Some of the measures identified in either one of the above cases are too general, too novel or too context specific to be able to be used as overarching good practice examples.

It was agreed, based on expertise and discussions with policy makers, to further investigate the delivery mechanisms of three types of measure considered as priorities by the European Commission:

1. clusters
2. innovation vouchers
3. promotion of gazelles.

This analysis is the subject of the following chapter.

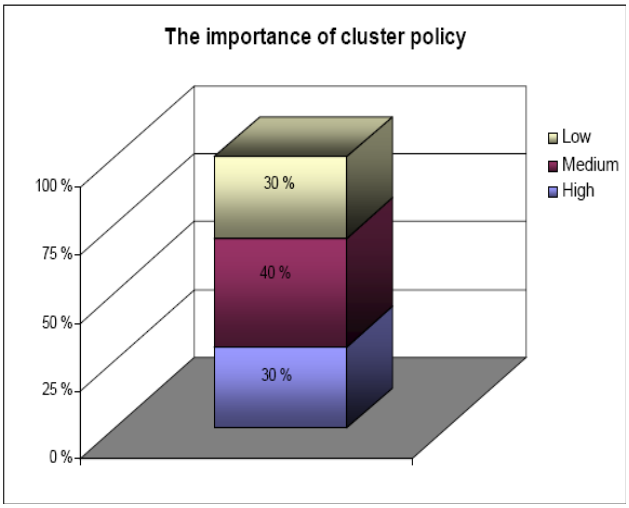
3 Delivery mechanisms of three selected measures

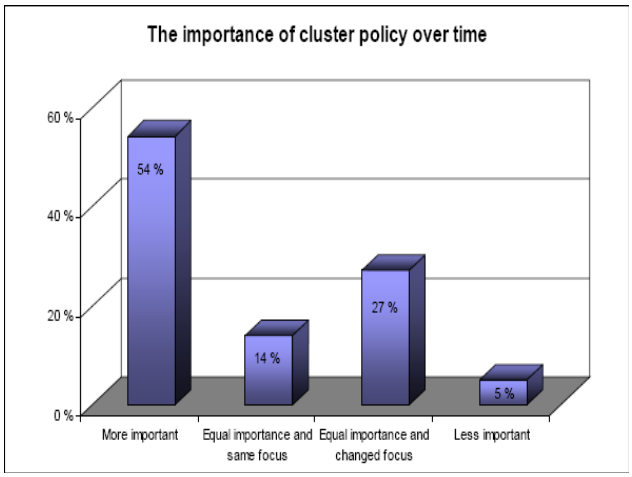
3.1 Clusters

3.1.1 History and overview

Clusters have rapidly emerged as a popular innovation policy tools since their appearance as key elements of competitiveness in Michael Porter's book entitled *The competitive advantage of Nations* (1990). A wide variety of theories leading to concrete proposals for action appeared in the last decade as some new principles, like the need to pool resources and create externalities, emerge as conventional wisdom. The notion of clusters as elaborated by Michael Porter goes beyond sectoral divisions, encompassing the whole range of related activities within a geographical area where performance is enhanced by proximity to producers both in the same sector and in other sectors using complementary inputs, with similar skill needs, etc. Sometimes the term cluster also includes the particular case of industrial districts, first used in the literature to emphasise the spatial dimension of intense interaction among firms in particular areas. The 'systems of production' is another similar concept associated with the synergies that arise from cooperation and competition. Finally, regional systems of innovation and the related ideas of innovative milieus put knowledge rather than the firm at the centre of the process.

Pioneers in this field of cluster policy at national level were Denmark, the Netherlands, the UK and Ireland. At regional level, trailblazers were the Basque Country, Catalonia (ES) and Styria (AT). It should be noted, however, that many European states and regions did not start applying cluster policies until the late 1990s.





Under the Europe Innova ([3]) initiative, DG Enterprise and Industry has commissioned the establishment of a European cluster observatory ([4]). Within the framework of the observatory, reports, including a synthesis version, on cluster policy in Europe (covering 30 Member States and 69 national cluster programmes) have been produced (Europe Innova, 2008). Some general findings of the reports are that the importance of cluster policy at national level differs significantly among Member States but is generally high. Roughly 70% of responding states note that cluster policies are of high or medium importance. The same

[3] See www.europe-innova.org/index.jsp online.
[4] See www.clusterobservatory.eu online.

study shows that 95% of respondents agree that the importance of cluster policy is increasing or remains stable over time.

3.1.2 Rationale of the measure

The key driver for policy makers' motivation to develop and implement cluster policies is not the fact that cluster phenomena exist and that they feature a number of positive economic effects, but rather the belief that public intervention can strengthen such phenomena. However, where there is increasing evidence and agreement among researchers that clusters exist, to date there is less evidence that policy interventions can generate value by speeding up the process of cluster development or increasing the effectiveness of existing clusters. Despite this, there is an underlying economic rationale for cluster-based economic policy that is consistent with standard economic models. This rationale is set out in brief below (Ketels, C. 2003).

1. The externalities that give rise to clusters indicate the presence of multiple equilibriums with different levels of prosperity, not only in different locations but also for the sum of all locations. Policy has a role in pushing locations towards more favourable equilibriums.
2. These externalities do not all occur automatically but can be triggered or strengthened through purposeful political action.
3. The time it takes for a region to reach its 'equilibrium' state is not set and can be significantly influenced by policy.

In other words, the common denominator in current rationale behind cluster policy is externalities based on trust/interaction/dissemination. Regardless of the analytical approach used, all have formal and informal multi-actor interaction as the basis for both the creation and the transfer of knowledge, and there are strong indications that public intervention will enable knowledge to be diffused faster and more effectively.

3.1.3 Basic features of the measure (type of support, beneficiaries, selection criteria, budget, targets)

Type of support

Cluster policy measures (i.e. cluster programmes) are normally delivered by supporting so-called cluster initiatives (CIs). A CI is an organised effort aimed at promoting growth and increasing the competitiveness of a cluster, involving companies, public organisations and higher education and research institutions. Although the label 'Cluster Initiative' is not used universally by policy makers, we will use this term in the current mini-study to characterise policy measures with a set of common underlying mechanisms, objectives, etc. Often, a CI is initiated by industry and government in close cooperation (studies show that CIs are initiated by industry in approx 32% of cases, by government in 27% and by both in 35%). A CI must be tailor-made to fit the specific context in which it is implemented, leading to differing objectives. However, CIs have a number of strong common elements as well, as set out below.

- stronger focus on the micro-economic business environment, in contrast to the traditional macro-economic emphasis;
- a long-term agenda looking to strengthen systems of interlinked actors instead of individual companies or broad sectors;
- improved networking of participating organisations, leading to increased trust and eventually lower transaction costs and spill-over effects;

- a balanced input of industry and government;
- a mix of cooperation and competition as drivers for learning and innovation;
- partnerships involving all sets of the triple-helix constellation.

Governments' primary role in CIs is normally that of financiers but also that of advisor, assessor and guarantor of fair play. As financiers of CIs, governments normally provide grants for a proposed budget. Other models are also possible, particularly if industry leadership is very strong. Government support could then involve providing supplementary services such as evaluations, internationalisation support, etc.

In any case, government support is normally based on some kind of selection and/or competition process. Two main paths can be recognised when examining CIs across Europe, explained below.

1. A CI is initialised based on government analysis of strong sectors and/or competence areas and on dialogue with industry. This 'negotiated' approach is probably very common in regions where there is a need to inject new energy into traditionally strong sectors that now face structural or other problems.
2. A CI is based on an open competition, normally a call for tenders. In these cases, which are of a more bottom-up nature, it is up to the actors of a cluster to propose action plans and to convince policy makers that their approach is valid. Even in such cases, however, the support to CIs is only provided if a broad regional backing from all relevant types of organisations can be proved.

Further, funding is not only based on a competition; a two-stage procedure is used in several cases. In the German 'Spitzen Cluster initiative', for instance, applicants have three months to prepare and submit a short outline of their initiative comprising the main components of the foreseen strategy. A high-level jury assess the outlines and invite (in the first round of application in May 2008) 15 applicants to develop full proposals. Five of these will be selected for funding. The funded initiatives will be evaluated after two years. Any further funding is based on the outcomes of this evaluation.

Governments' support of CIs will have very similar overarching targets: to increase growth and competitiveness of the cluster. There are several ways to achieve this:

- by generating new innovations, products, services, businesses and jobs based on top-level expertise;
- by supporting specialisation and division of tasks between regions to form internationally competitive centres of expertise;
- by increasing the capacity of regional innovation environments to attract internationally active businesses, investment and top professionals.

Operative targets can be much more tangible. The following national operative targets of the Finnish Centre of Expertise Programme serve as examples.

- In the projects launched by the centres of expertise, the share of joint project funding in the cluster is a minimum 40% by 2010 and a minimum of 70% by 2013.
- In the projects launched by the centres of expertise, the share in all projects of nationally and internationally competed funding is a minimum 30% by 2010 and a minimum of 50% by 2013.
- A minimum of 6 000 businesses will participate annually in programme implementation by 2010, and a minimum of 8 000 businesses by 2013.
- The projects launched within the programme as a cooperative effort of the various operators will influence, by 2010, the creation of a minimum of 5 000 new expertise-

intensive jobs and 500 businesses, and by 2013, the creation of a minimum of 10 000 new expertise-intensive jobs and 1 000 businesses.
- The total turnover and exports of businesses participating in the programme will grow by a minimum of 10% more in the cluster of expertise than in comparable industry businesses on average, and the number of rapid growth businesses in the cluster of expertise will be higher than in the industry and the service sector on average.

Beneficiaries

The main target groups of governments support to clusters are as follows.

- The individual companies operating within the perimeter of the cluster, mainly SMEs located in a defined geographical area and working in a specific industry.
- Public/private intermediary organisations, as collaborative networks of enterprises, local innovation agencies, business associations, universities, research centres, in order to enhance linkages among research and enterprises, share services, build infrastructure, and define an overall strategy.
- A network of enterprises, R&D institutions, intermediaries, etc. operated as a separated, autonomous legal entity. This type of target group is gaining importance and is more or less the only model in the French 'Pole de Competitivite' programme.

The previously mentioned study on national cluster programmes in Europe revealed the following details with regards to target groups.

- The key target groups of cluster programmes are private business and research institutions — 40 of the 69 national programmes have R&D institutions as an important target group. Of the 69 national cluster programmes, a particular focus on SMEs has been identified in 31 programmes.
- R&D involvement: in general, the R&D involvement in the European cluster programmes is high. In terms of R&D involvement, 29 programmes are classified as 'high'. Of the 69 programmes, 18 are classified as 'medium', while only 11 are classified as 'low' in terms of R&D involvement.
- Interregional/cross-border element: of the European cluster programmes, 50% include some sort of cross-border activity. Only a minority are defined as primarily cross-border programmes – but a large number of programmes include export projects or other activities with cross-border elements.

Selection criteria

The selection criteria applied vary greatly between programmes. There is a tendency, though, for proposals to be required to show strong capacities regarding R&D, innovation and internationalisation. The following table shows the selection criteria or key evaluation aspects applied in three different European national cluster programmes.

VINNVÄXT (Sweden) ([5])	POLE DE Competitivite (France) ([6])	Spitzen Cluster Wettbewerb (Germany) ([7])
Good growth potential	A development strategy that remains consistent with the economic development plan in the cluster's local area	High potential of goal achievement
Common strategic idea	Sufficient international visibility, in terms of industry and/or technology	A strategy that secures international competitiveness and branding
Regional strength and leadership	A partnership between players and a structured, operational mode of governance	Sustainability model/concept
Strong R&D environment	The capacity to generate synergies in R&D, resulting in the creation of new wealth with high added value	High potential of economic development and added value for the regional industry
Renewal in focus		Joint approach of industry, academia and public sector
All parties must contribute (Triple Helix)		

Budget

Cluster programmes are often financed from a variety of sources including public money, private contributions and EU funding. However, it is important to separate cluster management budgets from implementation and project budgets. Management budgets tend to make up only a very small part of the total budget (e.g. approximately 1% in the case of the French 'Pole de Competitivite' programme).

The size of public budgets given to CIs varies greatly depending on different context factors and on the ambition of the undertaking. Budgets also tend to include different activities, making comparisons difficult. In some cases, for instance, public budgets are only to be used for management activities, whereas in other cases project funding is also included. The table below provides some key figures for selected cluster programmes and their CIs.

[5] See www.vinnova.se/In-English/Activities/Strong-research-and-innovation-environments/VINNVAXT/ online.
[6] See www.competitivite.gouv.fr/index.php?&lang=en online.
[7] See www.spitzencluster.de/de/468.php online.

Cluster programme	Total public budget	Indicative public funding per cluster (CI)
VINNVÄXT (Sweden) ([8])	No definite budget ceiling, but at least EUR 6 million per year over a 10-year period	EUR 1 million per year for a period of up to 10 years
POLE DE Competitivite (France) ([9])	Approximately EUR 1.5 billion over three years (2006–2008) state funding. In addition, EUR 600 million for regional and local funding.	• EUR 400 000–1 200 000 for management costs • EUR 5 000 000–20 000 000 million for projects
Spitzen Cluster Wettbewerb (Germany) ([10])	EUR 200 million over a five-year period	Up to EUR 40 million for a five-year period
Clusterland Upper Austria (Austria)	Approx. 2,25 million EUR public funding in 2007 (50% of total). Public funding decreases yearly	Five CIs and three networks are co-funded. Co-funding varies between 20% and 70%.
Centre of Expertise programme OSKE (Finland)	EUR 22 million per year (2007–2013)	EUR 500 000–2 000 000

Public funding often reaches 50% to 70% in the first two to three years and then gradually decreases. A 'normal' public after five to seven years of existence is about 30%, but there are examples of CIs that have achieved a much higher degree of self-funding within a shorter timeframe (e.g. the Styrian Automotive Cluster AC Styria). However, it does not seem to be wise to completely withdraw public co-funding as this cut the bonds between public and private actors.

The general policy, then, involves lowering the co-funding to a symbolic rate.

The case of VINNVÄXT (Sweden)
The winners receive up to EUR 1 million per year for a period of 10 years. All the funding provided by VINNVÄXT requires at least 50% in regional co-funding, thus providing a total of approximately 2 million per year or more. The funding is allocated for periods of 3.5 years at a time, but the intention is that funding should continue for 10 years. The winners must submit a status report every third year in order to demonstrate that the funds are being used for the intended purpose and that the work is progressing.

Government grants to a CI can be used for a wide variety of activities and costs. Examples are:

- salaries of cluster managers
- travel expenses
- marketing and information material
- funding of key projects
- website development
- external consultants' fees.

Examples of activities supported include:

[8] See www.vinnova.se/In-English/Activities/Strong-research-and-innovation-environments/VINNVAXT/ online.
[9] See www.competitivite.gouv.fr/index.php?&lang=en online.
[10] See www.spitzencluster.de/de/468.php online.

- initiation of innovation, R&D and other cooperation projects, including developing cooperation platforms;
- training and qualification;
- international integration;
- image creation and positioning;
- influencing framework factors such as higher educational programmes, tax incentives, foreign direct investment (FDI) orientation, etc.
- follow-ups/evaluations.

3.1.4 Evolution of the measure: how do the basic features change over time and why? (why may be difficult to answer)

The following trends relating to cluster policy and its implementation have been recognised.

- **Towards global excellence: the growing importance of R&D and global value-chain integration**
  There is a trend towards the support of 'excellence' in cluster programmes. In short, this implies supporting clusters that are knowledge intensive, emphasise R&D collaboration and have a strong international position (or at least the potential to achieve one). Consequently, national cluster policies are moving away from supporting local and regional networks and towards cutting-edge competitiveness and clusters that have the potential of global positioning.

- **From ad hoc organisation to legal entities and private governance**
  The carriers of CIs have often been regional intermediary organisations such as development agencies, industrial associations, research institutes, and universities. In the past years, there has been a development towards the establishment of dedicated institutions with the purpose of managing the CI. Such institutions can have different legal forms (e.g. associations, foundations, limited companies, etc.). A key common characteristic, however, seems to be the independence from other stakeholders of regional and national innovation systems — both in terms of legal status and in terms of governance. It should be kept in mind that it is not so much the legal status of the cluster organisation that matters, but rather the increased ability to focus on the task.

  The drivers for this development may vary but an important aspect is the desire of companies to have a better organisational instrument for influencing the activities of the CI (in particular as private funding, membership fees, etc. become more important as financing sources). Another key reason is the need for clear rules for the distribution of responsibilities regarding tasks, budgets and contractual obligations: this holds true especially if the CI mobilises many actors and large budgets. Some more specific advantages of creating an independent entity are set out below.

  - From a financial point of view, it is important to enable the CI to 'do business'. An independent organisation facilitates this, e.g. by clarifying expenses, income and VAT issues.
  - The possibility of positioning the cluster as an independent organisation for funding purposes
  - The independence of the cluster organisation from any problems or issues that a host organisation may have, that are not cluster related.
  - A (potentially) higher flexibility in setting wages, bonuses, incentive systems, etc.

The advantages of independent cluster organisations are so convincing that the formation of such entities is increasingly becoming a minimum demand in order to access public sector support. As mentioned above, the formation of dedicated cluster organisations is, however, primarily an advantage for the companies of the cluster and rarely causes any conflicts in the development of the CI.

- **More and longer support — from project funding to long-term public sector commitments**
  A higher acceptance of cluster organisations as actors of the innovation systems also seems to imply that public funding is provided on somewhat different terms than before. In particular, the time period of support seems to be increasing, as does the total amount of funding (the share of funding seems to be decreasing, though). Both the Swedish regional cluster programme VINNVÄXT and the French 'Pole de Competitivite' support their clusters for at least three years. The VINNVÄXT initiative may even provide 10-year-long support. The funding is provided on the basis of framework agreements and business plans rather than on project applications. The public funding is important as a stamp of quality but should not be the sole, or even most important, source of money.

  A likely driver for this development is the policy makers' recognising that the cluster process may require a long time before any noticeable effects on companies' competitiveness are seen.

- **Clusters as an entry ticket to public support services**
  The fact that a cluster has been officially recognised by the authorities seems to be gaining in importance as an 'entry ticket' for further support. Informally, this has certainly been the case for a long time, but there seems to be a trend in connecting cluster labels with more official mechanisms.

  In the case of the French 'Pole de Competitivite' initiative, R&D funding for clusters is promoted through a special subsidy. Each supported cluster defines a research and development area, and within this area, additional funding is available for cluster companies participating in collaborative research projects (at least two companies and one research centre), after having received a competitiveness cluster label and finances from the state and its agencies under their competitiveness cluster programmes. The amount of additional funding amounts to EUR 230 million over three years (2006–2008).

- **From input monitoring to output assessments**
  A consequence of 'outsourcing' of responsibilities and long-term commitments of the public sector is an increasing focus on monitoring and evaluation of cluster support. This holds true not only for cluster-related policy measures but in general for innovation support. The identification of policy-relevant innovation cluster indicators (metrics) is challenging, however, for a number of reasons, but particularly because they fail to capture basic features of clusters that are essential to understanding the state and performance of a cluster (such as supply chain linkages, social capital and knowledge sharing). A further issue seems to be the lack of appropriate statistics. Available science, technology and innovation statistics are usually aggregated at regional or national level; it is difficult to identify economic activity that occurs at a sub-regional or cluster level.

3.1.5 Decisive features for success (are they are context-specific?)

Keeping in mind that the success of a cluster is determined by its growth, competitiveness and goal achievements, there are at least three levels for which success factors can be identified.

The first level comprises national framework conditions that may be difficult for cluster policy makers to influence. Such framework conditions are the competition culture, the high level of competition, and the promotion of investments in science and technology as well as stable legislative and administrational frameworks.

The second level is the programme level. What characteristics and contents make up a good cluster programme? Drawing upon experiences from newer national programmes such as the 'Finnish Centre of Expertise' Programme, the 'French Pole de Competitivite' programme and the Swedish VINNVÄXT initiative, which was subject to an international peer review in 2007, the following key success factors are suggested:

- securing a sufficiently long-term perspective during which support may be given to each of the chosen projects (10 years in the case of VINNVÄXT);
- a consistent, fair and thorough use of competition as a project selection mechanism;
- an overall openness to regional autonomy when it comes to design of, and priorities within, each project;
- different forms of process support offered to the projects, e.g. in-process evaluations, management training, study tours, inter-cluster interaction, etc.;
- a continuous benchmarking carried out in relation to similar programme initiatives taken elsewhere;
- involving the key public financiers as a dialogue partner.

Thirdly, Ketels (Ketels, C. 2003) suggests that cluster policies are more successful when they focus on clusters that are already strong and set in a location with a good business environment. This is consistent with the perspective that CIs are more successful if they are part of a broader strategy to improve the microeconomic business environment in a particular region or country.

For individual CIs, another set of key success factors apply. The *Cluster Initiative Greenbook* emphasises in particular the importance of a shared framework of competitiveness in order to promote CI success. In other words, this means the importance of shared visions and missions of the organisations involved. Further, the *Cluster Initiative Greenbook* puts forward the need for sufficient resources to run a long-term strategy without having to constantly seek further funding as a key success factor. This includes budgets for initiating/running key projects and at least a small operational budget to finance an office with a dedicated cluster facilitator. If such a resource is not available, CIs are very hard to sustain over time. It is not necessary for funding to come from the public sector but it must be there. There are also other success factors as suggested by evaluations and studies:

- a high level of trust between organisations involved in the cluster;
- a business culture characterised by openness to co-operations;
- the presence of strong scientific community;
- the skills of the CI-manager/managing organisation (skills include knowledge about the business logics of the cluster, good networks, and a good image).

The above-mentioned success factors are not necessarily context dependent. Ketels notes that 'cluster policies in Europe have become conceptually more consistent. The specific policy priorities are different across clusters and regions — this is exactly why European and even national programs with clear policy guidance often do not work. But the fundamentals of how effective analysis and activation of clusters works do not differ from one cluster to another.' (Ketels, C. 2004).

However, it is likely that not all states and regions are equally able to ensure that these success factors are present. A particular challenge for the new Member States of the European Union is the lack of trust between stakeholders of the CI and the limited openness of inter-organisational cooperation. If this is the case, a corresponding focus should be put on removing barriers in these areas.

3.1.6 Lessons from evaluations

There are many evaluations of cluster policies, both concerning the programme level and the CI level. However, most evaluations seem to be case based, meaning that they provide insight into specific CIs rather than cluster policies. Recent reviews of cluster policy include the peer review evaluation of the Swedish VINNVÄXT programme, and the 'Finnish Centre of Expertise' Programme has also been evaluated quite recently. An evaluation of the French 'Pole de Competitivite' programme is currently ongoing and results are expected in July 2008.

Much of the insight derived from these evaluations has already been mentioned earlier in this section. With regards to effectiveness of cluster policies, however, the following two points should be further emphasised.

1. **Cluster policies can create spillover effects and parallel structures**
   The (mid-term) evaluation of VINVÄXT acknowledged two potential spinoff effects due to the programme. The first is that in Western countries, a general recognition of the need for public-private partnership is emerging. At regional level, the VINNVÄXT project seems to function as a catalyst to leverage broader Triple Helix cooperation. As a result, the projects may have a positive impact far beyond the specific cluster or industrial branch which is perceived as the prime beneficiary. Secondly, the VINNVÄXT programme also appears to challenge the structure of the innovation support system in Sweden. Each of the regional (umbrella) projects supports highly focused and relevant R&D sub-projects which otherwise would have encountered great difficulties in finding public financial support.

2. **Activate clusters — do not select them**
   Cluster activation is focused on removing the most serious bottlenecks for higher productivity and innovation for a cluster by mobilising the capacity of cluster participants to act jointly. This approach is driven by an underlying model of economic development that views clusters as evolving over time depending on the profile of their business environments, the current composition of clusters in the region around them, and other factors driven by location and history. Joint action can affect this evolutionary process by changing the business environment, and by creating institutional structures that help to speed up the process of cluster evolution over time.

3.1.7 Specific circumstances in which they are recommended

According to the literature, there is no indication that cluster policies are only suitable for certain national or regional contexts. Descriptions of good practice can be found from most

parts of the world. However, there are indications that some contexts may be more favourable to clusters in terms of effectiveness than others. For instance, Ketels (Ketels, C. 2004) notes that case evidence suggests that effective cooperation between the public and the private sector is more likely when the regional government institutions have strong independent decision powers. He continues that this is more likely in countries with a federal structure, like Germany, Belgium, and Italy (and the United States), where elected regional officials control many of the decisions critical for the business environment. In more centralised structures, private sector leaders tend to ignore regional government representatives and try to work directly with the officials in central government that are seen as the ultimate decision makers.

As for implementing cluster policies in transition economies, the key barrier seems to be (as mentioned earlier) the level of trust and openness to cooperation that is necessary. In many transition economies, the enthusiasm for government intervention is very low among companies, and the capability of public research institutions to deliver good quality services is limited. In addition, business associations have a weak position.

3.1.8 Some recommendations

National and regional policy level

1. Cluster policy should not aim at creating clusters but at activating them. The activation of an existing industrial base is likely to be more effective than investing in the creation of new clusters from scratch.

2. Cluster development is long-term activity and responsibility. Public support should be provided for an extended period of time, at least five years or more.

3. A CI could take as a starting point a technology, a product, a material or any other issue that holds sufficient points of interaction and interest for companies and other actors. For instance, there are automotive clusters, polymer clusters, wood-processing clusters, biotech clusters, and so on. A commonality of CIs (which is in line with the economic theory behind clusters) is that the more organisations are involved, the more the CIs improve. It is therefore recommended that CIs are developed as open platforms of collaboration. In practice, this means that all organisations that are willing to contribute to the cluster should be welcome to join (assuming that they play by the rules).

4. Another issue lies with companies not located within the geographical areas of a specific CI: should these be eligible for support? Theoretically the answer should be yes if one follows the same argument as above — CIs benefit from new members regardless of origin. However, there may be some practical issues involved. One is competition; do we want 'foreigners' to intervene in our cluster? Another is public regulations that may prevent funds being given to foreign organisations. Since public support to companies within CIs is normally a secondary driver for involvement in a CI, this is probably a minor problem, though.

In summary, it is recommended that CIs allow for and encourage organisations outside of the cluster to participate in activities, and that public authorities strive to find ways of facilitating this. Of course all this should be in line with the strategic plan of the CI and not jeopardise the long-term development of the cluster.

5. There is a need for sufficient resources to run a long-term strategy without having to constantly seek further funding as a key success factor. This includes budgets for initiating/running key projects and at least a small operational budget to finance an

office with a dedicated cluster facilitator. If such a resource is not available, CIs are very hard to sustain over time.

6. National and regional policy makers should provide in-process support to the clusters with which they are involved. For instance, this could be training for cluster managers, evaluations and assessments, and cross-fertilisation of clusters.

7. In transition economies, the industrial 'buy-in' is even more important than elsewhere in order to establish trust among stakeholders.

8. A solid evaluation and assessment framework should be put in place before a cluster programme is launched. Policy makers need to have access to baseline data and CI stakeholders need to know what is expected of them.

9. Bearing in mind the significant advantages mentioned in Section 3.1.4, it is recommended that CIs are organised as legal entities. The specific form of this entity must be defined as according to the specific regional and/or national context. It is very common, though, that CIs are organised as limited companies or associations.

10. The EU has an important role as a safe-guarder of European clusters. This role does not imply that the EU shall intervene in national and regional priorities by selecting target clusters or by directing the Member States in their cluster priorities. Clusters are market actors and powerful because of competition and diversity — not despite it. As mentioned above, clusters should not be created but activated. It should be kept in mind that public support for CIs is usually small compared to the private sector. The public sector's power of governance is consequently limited. The EU should therefore strive to facilitate the inter-linkages of European (and non-European) clusters by reducing barriers and by fostering successful cooperation models. The approach of Europe INNOVA and the Cluster Alliance are good examples of this. The facilitation of inter-linkages also includes cross-border clusters that may suffer more than others from the failures of public support policies.

3.2 Innovation Vouchers

3.2.1 History and overview

The innovation voucher, which is alternatively called the research voucher or knowledge voucher, is a credit note that entitles SMEs to establish a contact point with knowledge-intensive organisations, called knowledge providers (e.g. research and educational institutions, companies, etc.), in order to 'buy' R&D expertise or knowledge.

The innovation voucher was first presented in 1995 by the Limburg Development and Investment Company (LIOF) of the Dutch province of Limburg. The rationale behind its development was to improve the competitiveness of SMEs by enhancing their knowledge level, broadening their innovative capacities and improving the knowledge transfer between SMEs and knowledge providers.

The first pilot experience was launched in Limburg in 1997. It was then adopted in 2004 in the Netherlands which, as a pilot programme, made the first 100 vouchers available. Because of the high popularity and success of the measure, 600 additional vouchers were made available in a second phase (October 2005). As of 2006, innovation vouchers have been introduced as a permanent way of promoting knowledge transfer to SMEs. The measure has recently been introduced on a national scale in other EU countries, like Austria,

Ireland, Portugal and Hungary, and other countries, like Cyprus, Poland, Estonia, UK and Denmark, are either anticipate its launch very soon or are considering its introduction. However, innovation vouchers are also being used at regional level. In addition to Limburg, the Benelux Middle Area (five regions from the Netherlands and Belgium) launched innovation vouchers in 2005, West Midlands (UK) in 2007, and the State of Baden-Wurttemberg (DE) in 2008. In the Calabria, Piedmont and Lombardy regions (IT), the scheme is being used on a non-permanent basis to stimulate the set-up of innovative enterprises (spinoffs and start-ups) and enterprise innovation. Therefore, the trend shows that the measure is gradually spreading.

3.2.2 Rationale of the measure

The rationale behind the development of innovation vouchers addresses three key problems: SMEs by their nature are not sufficiently innovative; insufficient public-private interaction between demand and supply of knowledge; and an incentive structure for knowledge institutes which is insufficiently oriented towards demand. The voucher scheme, if properly organised, is definitively a demand-led, customised measure. Firstly, it enables the SME to assess and choose a knowledge-related problem which hampers the accomplishment of an innovation project. Secondly (and most importantly), it allows SMEs to search and identify the R&D institution with suitable know-how specifically related to that problem. Finally, the R&D institution must be able to execute a project to address the problem and quickly deliver tangible knowledge results to the SME. The company may use the new knowledge to innovate a product, production processes or services.

3.2.3 Basic features of the measure

The innovation voucher mainly aims at bridging the cooperation gap between SMEs and research, often facilitating first-time contacts between SMEs and knowledge providers. On the one hand, SMEs have poor awareness of R&D organisations' potentialities to solve their innovation-related problems. On the other hand, although knowledge providers might generate solution-oriented knowledge, they are often out of touch with the demand side of R&D. The innovation voucher, being a coupon which can be spent on an R&D institution, provides financial support to start the cooperation.

The specific target of innovation vouchers is micro-, small- and medium-sized enterprises because of their low R&D capacity. In most cases, SMEs are targeted (as per the EU definition: this means those employing between 1 and 250 employees and having an annual turnover of up to EUR 50 million). In few instances, only small enterprises are admitted, whereas exceptionally, as in the Lombardy region (IT), the scheme is addressed specifically to spin-offs and start-ups.

As for which knowledge providers the vouchers can be spent on, the usual candidate considered are such (semi-) public Research and Technology Organisations (RTOs) and Higher Education Institutions (HEIs) registered in a list by the programme owner/manager. Also, private not-for-profit research organisations are often admitted, and in some cases even research departments of large R&D intensive companies. The knowledge-providing institution has to be either authorised by the voucher programme or has to be located within a specific region of the country/region funding the voucher scheme. However, some schemes (i.e. the Netherlands and Benelux schemes) also admit on their list of registered organisations those based in other EU countries, thus stimulating innovation through transnational cooperation. This choice is based on the acknowledgement that SMEs must be able to conduct an unrestricted search for the best knowledge, independently of geographic boundaries.

The mechanism through which SMEs are approached by the scheme manager is usually very simple. In most cases it is advertising that plays the crucial role of getting SMEs informed about the availability of vouchers. They are subsequently distributed on request. However, such mechanisms ends up attracting SMEs which are already sensitised to the idea of applying to external expertise for the solution of their innovation-related problems, defeating the purpose of involving enterprises which are not R&D-oriented. To overcome this effect, the Benelux Middle Area voucher scheme strongly relies on the role of intermediary organisations ([11]). They firstly support SMEs in their innovation needs assessment, then make them aware of the possibilities and potential of external knowledge providers to tackle their product, process or service problem. SMEs are also assisted in the identification of the most suitable external knowledge provider, in the cross-border information exchange and in follow-up projects. This mechanism ensures that innovation vouchers do not simply fulfil the objective of stimulating innovation, but more importantly broaden the basis on which SMEs approach innovation.

The eligibility to benefit from innovation vouchers in most schemes is guaranteed to all SMEs (EU definition). However, the evidence (i.e. in the Netherlands) often shows that most applicants are micro and small enterprises, rather that medium-sized ones. The Irish and Hungarian voucher programmes, in fact, admit applications only from small enterprises (EU definition).

As for the activities eligible for funding through the voucher scheme, virtually any 'knowledge' question concerning innovation can be submitted, ranging from technological issues, to project management, marketing, and intellectual property rights (IPR). Some voucher schemes do not define eligible activities, but only the ineligible ones (usually, no provision of goods, like software, no training courses, no activities for sales on the market, no internships, no advertising for sales).

There is no single vouchers allocation mechanism for enterprises. The most commonly utilised system involves handing vouchers on a 'first come, first served' basis. If the candidates outnumber the number of available vouchers, they are usually awarded by means of a lottery. However, some schemes are exclusively based on a lottery anyway (i.e. the West Midlands (UK)), whereas in one case (i.e. Hungary) it is standard practice that applications are evaluated as they take the form of project proposals. These mechanisms, as other features of the Hungarian innovation voucher, differ somewhat from most innovation voucher schemes and appear to contradict the rationale of this measure. It is indeed that of making the relationship between SMEs and knowledge providers much smoother, by means of maximum simplification of procedures and administrative burdens, both on the side of the scheme-managing organisation and, above all, for SMEs.

As for the size of funding, each voucher ranges from EUR 2 500 (the 'small voucher' in the Netherlands) to EUR 7 500. In those cases where the budget for each voucher significantly surpassed this range (i.e. in Hungary where it can vary from EUR 8 000 to EUR 100 000) it should be noted that the overall scheme has several features that differ from the Dutch model which has been taken as an example by almost all countries/regions having introduced the scheme so far. The trend is towards increasing the funding size as well as the number of vouchers annually allocated in each scheme.

When it comes to the incentive provided by innovation voucher, several aspects can be highlighted. SMEs are aware of the importance of staying competitive and innovating. They

[11] This term refers to public, private or mixed bodies, operating at local, national or international level and providing assistance and services to SMEs in the field of technological innovation, promotion and development and technology transfer, including service centres, technological centres, scientific and technological parks, incubators, agencies for regional development, public research and innovation organisations, liaison offices of universities etc.).

are able to keep an eye on the opportunities offered by the market, but when facing technological problems affecting the launch of a product are often unaware that their solution can be easily found by relying on the technological knowledge of external organisations such as, for example, public institutions. This is due mainly to the fact that SMEs are reluctant to disclose their innovation ideas, as well as to the existing information gap between SMEs innovation needs and the knowledge offer. The point is that most of the knowledge SMEs need has already been developed by public R&D institutions and large companies and would be easily available to them. Even when enterprises are able to track down knowledge providers, the cost of approaching them and managing the collaboration are high, also due to the administrative burden.

The incentives provided by the innovation voucher consist of different elements.

- Vouchers are distributed based on a simplified procedure (i.e. submission of a simple technological question and not of a project proposal, etc.) entailing a minor administrative effort by the SME.
- Vouchers allow SMEs to explore external sources of know-how and choose the knowledge provider they deem more appropriate to solve their technological problem among a list of selected R&D institutions based locally and, in some schemes, also internationally.
- The results of the use of an innovation voucher is a tangible solution linked to a specific technological problem.
- The procedure for the use of innovation vouchers is as simple as it is quick. The timeframe from the moment the SMEs poses the technological question to the R&D organisation providing an answer is short (ranging from a few months to one year).

3.2.4 Evolution of the measure

The schemes applied in the other EU countries started approximately in 2005, apart from the Limburg region, whose scheme was launched back in 1997. The reference model of most of innovation vouchers schemes introduced in EU countries and regions appears to be the one implemented in the Netherlands, where in 2006 the measure was turned into a permanent one. At this stage, most such schemes, which are currently running as pilots, tend to replicate to a different extent the features of the Dutch model and do not differ significantly. Therefore, it is difficult to observe which trends are developing.

Some conclusions will require a greater timeframe. However, some aspects, set out below, are clear at the moment.

- From the financial point of view, the value of single vouchers is steady (EUR 2 500 – 7 500. Most schemes have never exceeded these values. Hungary is an exception (vouchers range from EUR 8 000 to EUR 100 000) but this can be traced back to the overall programme features, which differ somewhat from the Dutch model (in this case, vouchers are released against a project proposal and not a simple 'technological question'). Therefore, the total value of the vouchers remains limited.
- The successful results of the Dutch scheme introduced in 2004 are encouraging an increasing amount of EU countries to introduce the innovation vouchers. Countries adopting the measure are rapidly increasing. The measures have recently been introduced on a national scale in Austria, Ireland, Portugal and Hungary, whereas others anticipate launching them very soon or are considering their introduction, like Cyprus, Poland, Estonia, the UK and Denmark. Several regions are also using the scheme (Limburg and the West Midlands, and attempts are being made in Lombardy, Calabria and Piedmont (IT)). The cross-border dimension is the main feature of the innovation voucher scheme established in the Benelux Middle Area, covering five regions from Belgium and the Netherlands. SMEs applying for this scheme can

access knowledge from intermediary organisations based both in Belgium and in the Netherlands, fostering transnational cooperation. In 2006, the Netherlands also introduced the possibility for its SMEs to address knowledge questions not only to Dutch R&D institutions, but also to those operating in Belgium, Germany, Scotland and Sweden.

- As for the beneficiaries, the trend is towards addressing the vouchers to micro, small and medium-sized enterprises, whereas in two cases only micro and small enterprises are admitted.
- Finally, the allocation mechanisms are similar in all schemes (allocation on a lottery basis).

3.2.5 Evaluations: lessons about the effectiveness or efficiency of the mechanism

Since the extensive adoption of the innovation voucher as a tool to boost innovation is very recent, and most schemes have not been evaluated yet, it is not possible to assess the long-term effects arising from the increased interaction between SMEs and their knowledge providers, as generated by the use of innovation vouchers. However, the first signs concerning its innovation potential are definitively positive.

As a rule, the voucher is provided without much bureaucracy in a specifically defined scheme, and the final decision concerning where, when and for what purpose the voucher will be utilised, rests with the SME.

The efficiency of the innovation voucher scheme is attributed to the very limited administrative burden the scheme entails with respect to the benefits it appears to offer. The reduction of administrative costs affects both the costs incurred internally by the institutions managing the scheme, and those on behalf of the SMEs for participating, especially those arising from complicated and/or lengthy procedures. As an example, SMEs applying for an innovation voucher generally are not requested to submit a project proposal, but a simple 'knowledge question'. This reduces the costs of participation and at the same time relieves the public administration from the costs of managing the evaluation phase. The programme manager's only involvement is to manage the application process and supply the innovation voucher (if applicable), and sometimes, to help SMEs identify the appropriate knowledge provider.

Where schemes have been evaluated, almost all enterprises declared that they were satisfied or very satisfied with respect to the research quality, the answer(s) given by the knowledge provider and the speed of the research.

The evaluations found that the vouchers introduce SMEs to knowledge providers, stimulate SMEs to commission new assignments that would have not be assigned without a voucher, and support SMEs in their innovation activities. The evaluation carried out on the Dutch innovation voucher scheme (2004 and 2005) by the Netherlands Bureau for Economic Policy Analysis (CPB) concluded that out of every 10 vouchers, 8 were used for a project that would not have been assigned without a voucher. Likewise, the evaluation of the Limburg scheme (released in 1999), stated that nine firms declared that they had scarcely made use of external knowledge resources in the past, but that they would do such more frequently in the future. To a great extent, this means that they become more inclined to make use of external sources of expertise.

The companies quickly benefited from redeeming the voucher. In most instances, the benefits were improvements rather than radical innovations, but the fact that these effects quickly became tangible confirmed that the voucher was a good way of awakening the enthusiasm of SMEs for innovation and, in this case, for using external sources of know-how. Perhaps the relationship that was built up by means of improvement projects can serve as a

basis for contracting out genuine (paid) innovation assignments in the future. In addition, it should be noted that in many cases the problem that led the SME to pose a question might not have been completely solved. However, in any case, the use of the voucher triggered a solution process or speeded it up. In this sense, it was a fruitful experience.

Finally, it has been noted that many enterprises approaching the voucher scheme are new to research activities. Therefore, the effect of the innovation voucher scheme is not limited to stimulating innovation, but also to sensitising SMEs not used to innovating towards more knowledge-oriented behaviour.

In addition, the success of the scheme can certainly be attributed to its customisation. When the scheme is organised in such a way as to let SMEs identify the research institution most appropriate to solve its innovation-related problem, the innovation voucher leads to successful results.

3.2.6 Conclusions and recommendations

The success of the innovation vouchers schemes appears to be linked to several conditions.

In general, the evaluations and reports undertaken on the currently active innovation voucher initiatives conclude that the voucher is an appropriate policy instrument to support SMEs in their innovation activities in order to overcome coordination barriers and increase the interaction between SMEs and public and private knowledge providers, e.g. universities and technology transfer institutes. The voucher makes SMEs aware of external sources of knowledge and stimulates SMEs to commission new joint activities with knowledge providers after the completion of the 'voucher project'. SMEs are more than satisfied with the voucher instrument and the work commissioned meets their needs and expectations.

Some recommendations can be made based on the evaluation undertaken so far.

- SMEs benefiting from innovation vouchers schemes are satisfied, as long as the implementation process runs smoothly. The role of R&D institutions is crucial in this regard. It is essential that they keep in touch with committing SMEs and ensure that the assignment is duly and successfully accomplished.
- On the one hand, it is recommended that the entry threshold for SMEs is kept as low as possible, in order not to affect SMEs' interest in vouchers and to keep the overall administrative burden low. However, a compulsory contribution from the SME might be recommended to ensure some added value resulting from the innovative project.
- Despite limitations, some schemes foresee the possibility for SMEs to spend the vouchers outside the specific country/region funding them. That clearly represents the acknowledgement that SMEs must be able to search for the best knowledge regardless of geographic boundaries, and that knowledge circulation is the most efficient way to stimulate innovation. Moreover, such a possibility introduces competition among R&D providers, thus stimulating ethical mechanisms of performance improvement and higher efficiency. Therefore, it shall be recommended that vouchers may be redeemed outside the region/country that issued them.
- The support of intermediary organisations in providing help to SMEs in the use of vouchers, although limited, has proved to be successful. Such support can be offered in approaching SMEs and sensitising them to the possibilities and potential of using external knowledge to solve their technological problems. Intermediaries can also help in cross-border information exchange, as well as in initiating follow-up projects. Such a role could be undertaken by existing public intermediary organisations, taking advantage of their links with and in-depth knowledge of SMEs in their geographical/sectoral reach. In this sense, intermediaries' contribution to strengthening the effect of vouchers should be further investigated.

3.3 Gazelles: supporting rapidly growing companies

This chapter addresses the policy efforts to identify and support rapidly growing companies (known as gazelles). There are, however, a number of difficulties in this particular area.

1. To start with, neither the definition not the identification of gazelles are easy tasks, hence Section 3.3.1 is devoted to their overview as well as to a discussion of what kind of measures are appropriate for such distinctive types of companies.
2. Assuming that it is possible to select and support gazelles, the next question is whether there is a rationale for policy or whether the market would be the most appropriate mechanism for promoting them. Section 3.3.2 explores the arguments and counterarguments for public intervention.
3. Because of the relevance of gazelles for economic prosperity, an increasing number of countries/regions adopt measures hoping to lead to an increasing number of gazelles. The most prolific among these measures are discussed in Section 3.3.3.
4. Measures and different types of intervention evolve over time; for any kind of support, it is of interest to explore whether it evolves over time, and if so, in which direction (Section 3.3.4).
5. Success factors and stories are presented in Section 3.3.5, followed in Section 3.3.6 by an effort to ascertain which of the measures being discussed have been evaluated, and what the main outcomes of such evaluations are.
6. Section 3.3.7 deals with specific circumstances, whereas the final section addresses particular recommendations.

3.3.1 History and overview

In the US, some of the most successful firms in terms of growth, profitability, innovation, competitiveness and employment are new firms which 30 years ago were simply small-scale SMEs that needed support from government to develop their ideas and products. The outstanding success of a number of these firms, which include Apple Computer, Chiron, Compaq and Intel (Audretsch et al. 2002, as in PRO INNO – INNO Grips 2007), has created the expectation that by supporting SMEs, governments can, to some extent, take control of their economic destiny. This success is attributed mainly to market forces and only exceptionally, at state rather than federal level, are there concrete support measures relevant for gazelles. It has occasionally been noted that broader R&D measures (defence procurement, SBIR and Advanced Technology Programmes) are important. But this may be largely due to the American cultural perception of risk and entrepreneurship, as well as venture capital and private equity; this involves offering not only financial but also managerial support, and is considered to be the cornerstone of the American success stories.

Firm dynamics are at the core of policy making and academic research. Rapidly growing firms ensure profits for the owners and economic prosperity in the regions where they operate. Hence, it does not come as a surprise that entrepreneurs, investors and policy makers wish to be involved with rapidly growing firms. Using various criteria for different countries and periods, academics have proved that gazelles make a difference to an economy, particularly in terms of their contribution to employment.

The name 'gazelles', denoting firms that consistently outperform the industry average as a result of their distinctive role as innovators, goes back to Birch (Birch, D. L. (1981): between small firms with less than 20 employees (Mice) and large firms with more than 500 employees (Elephants) stand high-potential firms (Gazelles). Using a pioneering database

(for the time his research was done) he invented this notion of gazelles as being the really interesting part of companies that make a difference over time. Ever since, gazelles have been extensively studied by both academics and policy makers.

There are two principal criteria generally used for defining a firm as a gazelle, although there is some discussion about other factors too. Both must apply to the firm in question, before it can be called a gazelle. The first is that the firm must be small. The second is that the firm should have a record of high growth. But *there is no standard measure of how small a gazelle should be when it starts out, or of how fast it should have grown*. As Autio et al. (2007) have observed, wide differences exist between different governments as to how a gazelle is defined. For example, in France, the current definition of threshold growth for an SME differs significantly to that used in the UK. In the Netherlands, the population considered is enterprises with 50 to 1 000 employees in the sectors of manufacturing, trade and services, and the criteria are more elaborate, referring to:

- the turnover increase: by 60% or more within three years;
- the number of employees: an increase by 60% or more within three years;
- the turnover and the number of employees: an increase by 60% or more within three years (Ministry of Economic Affairs, the Netherlands, 2006).

The challenge for policy makers is to know what they wish to achieve.

There is only a vague agreement on their performance and abilities. *Their competitive advantage and economic performance arises from their firm-specific and idiosyncratic dynamic capabilities*: their capability of delivering products quickly, their flexibility in adapting to anticipated changes, their ability to provide high-performance products and apply updated technology, and their capability of mastering financial management (Bares et al., 2006). These dynamic capabilities, which allow the efficient use of knowledge and technology, are what assure the rapid growth that characterises gazelles. Recent evidence suggests that firm heterogeneity has an important impact on employment effects over time. Moreover, it depends on the regional characteristics of the location of the start-up. Some regions are more receptive to certain types of start-ups than others. Therefore, both the type of entry and the characteristics of the region are important for employment growth (Acs and Armington 2004).

Some authors consider that the real issue in business dynamics is not so much size but age. Most new firms are small and unfortunately there is incomplete information on the entry and survival of firms. *Sectoral characteristics, regional history, policy mix, human capital and more play a significant role and it is practically impossible to recognise gazelles at their inception*. It is only after some time and a series of decisions (some right, some wrong) that they distinguish themselves from the average new entries and start growing with a faster pace. But even then, extrapolation is dangerous: high growth-rates over a period of time do not guarantee high growth in the future.

In summary, the following may be noted.

- ***Gazelles are an important element of success for an economy*** but their definition is quite vague: they are dynamic start-ups that grow quickly, but there is no agreement how quickly and over which period of time.
- Because gazelles differ significantly from each other ***it is difficult to identify them*** at an early stage and hence to select who and how to support.
- One may even argue that once dynamic SMEs have been proved to be gazelles, they do not need state intervention to grow further, because the financial system and the market recognise them as highly promising, hence they are not short of financial resources and they can afford to hire specialised human resources. Hence, before studying ways to support them it is crucial to discuss whether there is a rationale for public intervention.

3.3.2 Rationale of the measure(s) to support gazelles

Public intervention is only justified *if the market fails* to allocate resources to an activity that has high social returns on investment. Hence the crucial question is whether and to what extent their growth can occur based on the market alone. A particular feature of market failure emerges when other actors (state bureaucracy or potential competitors) create *barriers to entry or barriers to growth*. In this case, policies are needed to level the field.

Both arguments apply to a great extent to rapidly growing companies. High social returns on investment are assured by increases of employment, increased competitiveness, profitability and taxes. At the same time, incumbents may try to stop fast-growing firms to eliminate future competitors at an early stage. State bureaucracies, easily overcome by firms that dispose of the necessary resources, are insurmountable for smaller ones that pool all their resources in their efforts to grow. Hence, it is argued here that support to gazelles is justified for a number of reasons, set out below.

1. Gazelles face the same problems as all SMEs (*limited access to finances and human capital*) but they face them more rapidly and at a higher pace. They encounter the obstacles of all SMEs sooner and tend to find them even more insurmountable than do 'ordinary' businesses (Ministry of Economic Affairs, the Netherlands, 2006).
2. Gazelles are in general more innovative, hence they face the *market and systemic failures associated with RTDI* more than other companies ([12]).
3. In the crucial phase of transition from 'pioneering' to 'consolidation', gazelles face an additional challenge: they are rapidly identified as an opportunity and a threat to bigger companies that see them as potential future competitors and try to acquire them in friendly terms or, as quoted, by hostile takeovers. Often the acquisition results in the absorption of the dynamic skills of the newcomers into the more crystallised structures of the established company that makes the takeover bid. This is *an acquisition danger* that may offer satisfactory private returns to the entrepreneurs but deprives the economy of a new, dynamic element. One may of course argue that acquisition is not a 'market failure' but the result of competitive market behaviour. It would take a much deeper analysis, on a case-by-case basis, to identify whether the acquired company would have grown more rapidly independently than at the marginal growth of the first that acquired it. Transnational acquisitions make the analysis even more complex. Israel serves as a very interesting case study in that respect.
4. Rapidly growing companies contribute to the rapid *restructuring of entire economies*, allowing them to benefit from global windows of opportunities. The birth and rapid growth of many firms in related activities leads to the creation and transformation of whole economic sectors by these firms. In the US in particular, a new generation of firms has emerged to establish industries that have attained a size and level of dominance that was wholly unexpected. But as there is resistance to change, incumbents may try to use barriers to entry to block restructuring through massive entries.

[12] Although it is not always clear that gazelles are more innovative there is significant evidence for that in a number of studies. For example in the Netherlands it was measured that the expenditures on research and development of high growth enterprises are significantly higher than those of non-high growth enterprises. 40% of the high growth enterprises spend 10% or more on research and development, compared with 30% of the non- A knowledge-intensive production process demands highly qualified employees. High growth enterprises appear to make more use of highly qualified employees than non-high growth enterprises. Besides, because they make higher investments in research and development, high growth enterprises invest substantially in human capital (NL 2006)

There are however at least three counterarguments to this reasoning, discussed below.

1. Gazelles are, by definition — albeit an *ex post* definition — successful; they are handling the risk that growth and expansion bring far better than other firms. Why then should they be offered more help than the other firms when they appear to need less? (Inno Grips 2007).
2. As the private sector is famous for reacting faster and more accurately than the state, venture capitalists and business angels will more rapidly identify potential gazelles and support them. This is true for countries with a tradition and abundance of venture capital (USA, the UK, Israel), but less so in other countries where venture capital is stimulated itself by public incentives. In addition, the challenge is not to support them once they have proved their strength but allowing them to do so when they are still struggling to overcome barriers.
3. The most important counterargument, however, refers to the risk of substituting market by government failure. By trying to rectify the misallocation of resources by 'picking winners' policies (Pitelis 1994), intervention may result in crowding out or market distortions. Picking the wrong 'winner' or allowing 'winners' to relax their entrepreneurial efforts because they are covered by particularly general schemes may do more harm than good. This is why it is crucial to discuss specific features of measures addressing gazelles and see whether and how they approach the elimination of market failures without creating others.

Considering the pros and cons, it seems that support to gazelles can be effective and recommended only conditionally. The conditions refer both to the market dynamics and the abilities of the public service. These conditions will be discussed hereafter, based on concrete measures and experiences so as to conclude with concrete recommendations.

3.3.3 Basic features of the measure(s) addressing gazelles

The measures studied and reported below are a combined overview of measures reported by Autio (Autio et al. 2007): measures addressing gazelles, measures from the TC database and measures declared in the TC country reports of 2008 ([13]). These measures are classified into two different groups so as to make functional recommendations for policy makers:

- the type of companies that are eligible for support;
- the type of support measures offered.

The difficulty of defining gazelles explained above is solved by some measures by addressing total populations, or populations for which they use proxies: innovative, export-oriented or SMEs in high-tech sectors are expected to generate more gazelles than others. Other policy makers experiment with measures addressing gazelles directly either based on selected objective measures or on the declaration of the company management itself regarding the targets of growth.

Gazelles are addressed by policy makers in two ways, as described below.

1. Populations to be supported, out of which gazelles will emerge. These kinds of populations are all SMEs, high-tech SMEs, all start-ups, new technology-based firms (NTBFs), innovative start-ups, and export-oriented start-ups. *While not universally confirmed, conventional wisdom and selected empirical research suggest that gazelles grow mainly out of innovative start-ups and export-oriented start ups, hence for policy purposes they may be called* ***gazelles' proxies***. This does exclude the possibility that out of all start-ups, high-tech SMEs or even traditional SMEs, one cannot observe (with hindsight) the inception of gazelles, if particular circumstances

[13] The reports will be made publicly available on the TC website later in 2008.

become apparent (e.g. new entrepreneurial forces, changes in enabling and framework conditions). Hence, the whole range of actors is addressed by policy makers in an effort to create either a population out of which gazelles can emerge, or gazelles directly emerging. The ***gazelle criteria*** are of three types: upon declaration of the company that it envisages growth (subjective gazelles), upon any quantitative threshold determined for a scheme (objective gazelles), and upon decision of the agency promoting the specific measure (agency-determined gazelles).

2. In the second dimension, support schemes can be classified according to the type of intervention they are using. The support can envisage basic infrastructure (science parks, incubators, university-industry cooperation), support for linkages (university-industry cooperation, clusters, events for meeting investors, support for participation in fairs and exhibitions other bridging activities), support for physical capital (seed, R&D, new investments, operational, venture capital and business angels incentives), and support for human capital (training and/or hiring skilled people, entrepreneurship courses). The targets of this support may comprise different corporate functions, which include mainly seeds/start-ups, innovation, production, marketing, commercialisation and internationalisation).

<table>
<tr><th></th><th>Infrastructure</th><th>Linkages</th><th>Physical capital</th><th>Human capital</th></tr>
<tr><td>Seed/start–up</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Production</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Innovation</td><td></td><td colspan="3" rowspan="3">This is the main area of measures addressing gazelles directly, while all other cells in the matrix address a broader population out of which gazelles may (or may not) emerge.</td></tr>
<tr><td>Commercialisation of R&D</td><td></td></tr>
<tr><td>Internationalisation</td><td></td></tr>
</table>

This analysis suggests that policy interventions aiming at the support of gazelles may be seen to be composed of two types of measures, discussed below.

A. Measures addressing all start us (and hence gazelles, among others)

Policy for innovative start-ups and gazelles tends to be embedded in an overall framework. These are the measures that would be classified in the grey area of the table above and include all types of infrastructure, R&D grants and loans, tax incentives, mentoring schemes, training schemes, etc. The crucial question here is whether these measures are sufficient and supportive or whether they are tailored to less ambitious companies and eventually may prove counterproductive for gazelles.

Growth of new firms is assumed to be a pyramid: all start out at the basis, with a reducing number of companies as growth rates increase. To support this process of growth and emergence, policy makers have created differentiated methods of support across the economy comprising a broad policy mix of measures: taxation; grants, awards and competitions; monetary policy; regulatory approaches including regulation of the labour market; training; information, dissemination and networking or restructuring approaches; and access to facilities (INNO GRIPS, 2007). From the TC database, it seems that most European countries and also more and more regions are now endowed with these basic measures that support overall entrepreneurship: elimination of barriers for start-ups, financial support in the form of venture capital or business angels, state grants, human capital development in the form of training and mentoring, and last but not least, infrastructure in the form of science parks, incubators, etc. While there are still many barriers and inadequacies, the present study will not focus on those general measures but rather on measures addressing high-growth companies directly. An indicative illustration of this approach can be found in the TC country reports of 2008 presenting (and to a lesser extent assessing) the

measures promoting gazelles, from which it is clear that the former is more often addressed than the latter.

There are, however, also counter-arguments to the broadly utilised general start-up support as a means to support gazelles. The dynamic character of gazelles suggests very strongly that static policies (aimed at all firms in the SME sector, treating them in the same manner, whether they are growing or not) will not work to facilitate growth for firms which are starting to grow and which continue to grow quickly. In fact, such policies may put a break on growth, particularly on the fastest growing and most successful firms, because they fail to address the issue of growth. As most SMEs remain relatively small, and because policies have been designed to work for the majority of firms and not necessarily for the benefit of the fastest growing, this means the current approach may not make the significant contribution to the economy that could be achieved (Bares et al., 2006). Some evidence supporting this may be found in the assessment of Israeli policies. Israel, being one of the most successful countries in terms of innovative start-ups on a global scale, is concerned about start-up support reducing the potential for rapid growth at later stages, and hence creating a lack of medium-sized companies in the county.

The assessment is as follows: 'Israeli policy orientation towards the creation of start-ups is so strong and the business culture is [so] supportive of their growth that the most commonly heard criticism is that the country is too oriented towards the start-up culture and should shift at least some of its focus towards creating large firms with a dominant global position. So much wealth has been created by entrepreneurs and investors, either through the sale of start-ups or their flotation on foreign stock exchanges, that the industry has an image of a quick way to make huge amounts of money through dedicated focus. This image existed before the Internet bubble and survive[s] till this day. Compared to many other countries, access to seed capital is relatively easy. *In public discussions [around] start-ups, most of the concern is not about support needed for start-ups but about the way technology-based gazelles are snapped up by multinational companies*. The gold standard for start-up success is still flotation on NASDAQ. But the barrier for such flotation has been raised considerably both by regulatory and market demands. In these conditions, many of the VC funds deliberately groom their start-ups to be acquisition targets. The argument against this trend claims that the country is missing huge opportunities by these accelerated sales because promising companies could create far more wealth and jobs if they were more patient and persevering. This argument might be correct, or not, [...] but there is not very much that can be done about it. There is a strong doubt whether policy can have any effect on this phenomenon because government intervention to delay M&A exits would send a threatening message to the VC funds' investors' (*TC National Report Israel 2008*) ([14]).

As a conclusion, one may suggest that a significant amount of measures for SMEs, start-ups and gazelles' proxies exist already, so much so that it may eventually prove counterproductive in some instances. What is more challenging is the identification of measures that target gazelles exclusively — this has been undertaken in the next section.

B. Measures addressing only high-growth firms

The real prerequisites and conditions for high business growth are beyond policy makers' reach. Bares et al. (2006) have analysed the type of links or relationships between gazelles and their environment that foster their rapid growth and suggest that the economic environment in which gazelles operate is a fundamental determinant for their economic performance and high growth. According to this work, 'territory' or economic environment can be defined as the broad set of specific environmental variables or factors that affect gazelle activity. These are economic stability and growth, legal systems, cost of production factors or

[14] This will be published on the TC Database later in 2008.

marketing, level of specialised research and educational institutions, the protection of IPR, tax burdens, and the shared societal values and cognitive programming that affect the way people notice, categorise, and interpret stimuli from their environment.

Parker et al. (2005) have suggested, on the basis of their research, that there are certain factors which can explain why some of these gazelle firms continue to grow and why some do not; these factors are mainly associated with 'dynamic management strategy'. Although disagreements about definitions prevail in the literature, it might be argued that corporate venturing can be more effective in providing support than general venture capital, because of the superior knowledge of markets and technologies that an investing corporation might have, and the ability to perhaps provide access to its own resources and brand (Rasila, 2004). It may enable a new company to break into the market more quickly than if the company had gone it alone, or with alternative investment a gazelle may find that its link with an established company 'opens doors'. There are of course dangers and limitations of corporate venturing. A gazelle might encounter similar problems as with venture capital and business angels (as discussed previously), in terms of attracting future investors if there is already a corporate venture investor on board (INNO GRIPS 2007). Business angels and venture capital are also seen as excellent screening mechanisms for selecting promising investments, and thus they attract policy makers to support VC and business angel schemes.

But based on these observations, recent dedicated enquiries are now suggesting what high-growth firms really need and what policy makers should address:

- experienced independent coaches to act as a 'sounding board';
- a network of similar high-growth companies;
- knowledge of personnel issues;
- knowledge of marketing issues;
- better access to sources of finance, and more venture capital;
- simplified regulations;
- a more flexible labour market;
- training in entrepreneurial skills (Ministry of Economic Affairs, the Netherlands, 2006).

There are very few measures explicitly (let alone exclusively) targeting gazelles and this does not come as a surprise, because addressing gazelles is both difficult and risky for a number of reasons, as seen below.

1. The difficulties start with the differences in definitions: which 'gazelles' should be promoted. While high-growth firms are accepted as an appropriate population for support in theory, when it comes to setting eligibility criteria, the definitions play a strategic role and some start-ups have to be excluded. This can be both technically and politically hazardous and hence policy makers prefer to remain at a level of broader eligibility criteria.
2. Independently of the definition, *it is only with hindsight that a gazelle's identity may become apparent*. A ’standard’ growth pattern for high-growth enterprises does not exist. High-growth enterprises also have their ups and downs, partly determined by market conditions, not internal capabilities. Only a small share of firms declare that they want to grow (e.g. in Finland, only 7% of firms wanted to grow in 2004 (KTM, 2004b) from Autio), while in the UK, only a quarter of companies that grow are gazelles, but as a policy maker, one cannot attribute specific firms to general populations (willing to grow, able to grow).
3. There is an inherent reluctance to take risks by 'picking winners', as suggested in the rationale of intervention, since, after the general criticism in the 1980s, policy makers can very easily be accused of causing government failure precisely because of the difficulty of identifying potential gazelles and their needs.

4. Finally, those creating successful measures for gazelles should know how gazelles behave, but not all gazelles behave the same. Some grow and then stabilise, others take a long time to take off and then present spectacular growth, while in others growth rates move backwards and forwards. But their common features allow the identification of common needs: at the time of initial growth, most entrepreneurs delegate a part of the operation management, so that the 'span of control' is not restricted to their own skills. Most entrepreneurs hire an experienced 'chief operations officer'. Experienced turnover and marketing professionals are also often hired. Most high-growth enterprises diversify very quickly, often even during the phase of initial success. Anticipating potential capacity is a part of the start-up phase, and in the phase of initial growth, entrepreneurs are already planning ready for the later phases. Often enterprises hire staff to cope with the expected growth (Autio et al., 2007). This should be viewed as an additional difficulty when distinguishing measures addressing gazelles from those addressing other companies.

An extensive search for measures in the literature and in the TC database has produced the following evidence (see table below) on operational measures. In the first row, there is a review of measures selected by a study dedicated to gazelles (Autio 2007), suggesting that of the measures declared as relevant for high-growth companies, only a fraction address gazelles in particular. Those measures are complemented by evidence from a dedicated Dutch report (EIM 2006) and more recent evidence from the TC database and the draft TC 2008 country reports.

Country	**Support for gazelles/ support for all innovative start-ups (Autio 2007)**	**Programmes analysed in PRO INNO Trendchart, the dedicated Dutch study and INNO Views**	**TC DB number (if available)**
Australia	COMET 1/4		
Brazil	0/2		
Finland	Growth Firm Service1/2		
Hong Kong	0/2		
Hungary	Corvinus 1/3		
Italy	0/2		
Netherlands	Mastering Growth 1/2	• Amended tax scheme • Innovation Network for entrepreneurs • Port4Growth • Kansenzones	• NL 05 • NL 22
Spain	0/3		
UK	• g2i • high-Growth Start-up • Mustard 3/4		
France		• Gazelles • France Investment	• FR 66 • FR 76
Denmark		Gazelle-Growth programme	
Ireland		• High Potential Start-Up • Enterprise Ireland (informal strategy)	Ein 39
Norway		New Growth (Nyvekst)	TBA

In some countries, intervention may include the words 'high growth' in the title or target of a measure, but further inspection may reveal that it does not distinguish itself from the generic measures for SMEs or start-ups.

Some of these measures are described in detail in the TC database, others are presented in national websites and for still others there is not sufficient information, partly because they are very new. Their distinctive features are described in the following section.

3.3.4 Specific measures: basic features and evolution

COMMET Australia This programme provides subsidies of 80% for business development activities such as marketing, commercialisation, and IPR management services to individuals (e.g. researchers) and small firms in their early stages, who want to commercialise a new technology and target significant growth. Examples of supported activities include business plan market research, product trials, and patenting. The programme is competitive and offers services through a network of affiliated private sectors advisors. The criteria on which applicants are judged are as follows: (1) applicants are looking to grow substantially through commercialisation of an innovative product, process or service; (2) applicants have identified weaknesses that are preventing them from implementing a commercialisation strategy; and (3) applicants are unable to fund activities to address these weaknesses. The annual budget for the programme is EUR 6.5 million, and the typical support amount is EUR 50 000 (AUD 64 000) per firm or project. A 50% subsidy for an additional AUD 64 000 can be obtained in the second stage of the programme. The programme targets all technology sectors (Autio 2007).

The **Growth Firm Service in Finland** was started in 2003 by the Finnish Ministry of Trade and Industry, who also finance it. The programme aims to proactively identify firms and entrepreneurs with a high growth potential and direct these to appropriate services offered by the various public agencies that support SMEs and innovation. This successful programme is implemented as a cooperative effort between these agencies, and it is coordinated by the private SME Foundation PKT. The goal of the programme is to act as a 'one-stop shop' for public services relevant to growth firms. There are four major public agencies that offer services to SMEs in Finland, and through the contact with a business consultant in one of these agencies, a firm can get information about and be referred to appropriate services offered by all the agencies. These organisations are Finpro (internationalisation services), Finnvera (a state-owned financing company), SITRA (the Finnish National Fund for Research and Development), and TE-keskus (Regional Employment and Development Centres). *Consultants in all of the agencies proactively seek to identify promising growth firms.* When identified, the consultant offers a growth analysis session with the firm, and based on the growth analysis, specific needs for achieving growth are prioritised and appropriate services from the four participating institutions are enlisted.

In total, there are approximately 100 different support services that can be offered by the participating institutions to the firms. The majority of these support measures concern financing, since financing is the main activity for three of the four participating institutions, while the fourth institution is focused on support for internationalisation. The target group is SMEs with a high-growth potential in all sectors. Nevertheless, most participating firms are technology companies, since these companies may often be more interested in the services that are being offered. These firms are often in the expansion stages of development since firms younger than this may not yet be recognised ('on the radar screen') of the public business consultants. The younger firms are often global from their inception or firms with a strong technology focus. The program was started in 2003, and each consultant or service is financed by the respective institution. It is thought that approximately 300 to 400 people

spend around 10% to 15% of their time on offering growth services. The budget for the coordination and follow-up of the programme is EUR 0.5 million per annum.

The Hungarian **Corvinus International Investment** is a unique way to approach high growth, as it addresses growth via acquisitions. It provides funding for co-investments with Hungarian companies abroad. Corvinus can co-invest in Hungarian firms' subsidiaries abroad, assist Hungarian firms to develop appropriate business strategies in order to facilitate access to international markets, and contribute capital towards investments that enhance the competitiveness of these firms. The aim of the investments is to facilitate foreign direct investments by Hungarian companies, in order to create, acquire, or *develop ventures abroad*.

In the Action Plan Entrepreneurs '**Entrepreneurship policy in the Netherlands'** (2004), the Ministry of Economic Affair (EZ) describes its aim as one intending not just to create more entrepreneurs, but also to improve the quality of entrepreneurship. The action plan stipulates that fast-growing companies are an important target group for Dutch entrepreneurship policy. Entrepreneurs need to be free to conduct their business, at all stages of a company's development. Specific policy objectives in this regard include:

- less administrative burden and red tape;
- more funding for start-ups;
- more opportunities for innovation and fast growth;
- a greater focus on entrepreneurship in education;
- encouraging entrepreneurship among ethnic minorities;
- encouraging international enterprise;
- focus on a secure business environment.

The largest innovation policy instrument, the **tax scheme WBSO (NL_05),** was broadened recently (2008) to make it more suitable for starters and fast-growing firms**.** In 2006, the Ministry of Economic Affairs made agreements with the three Universities of Technology and municipalities for setting **Zones of opportunity ('Kansenzones')** in which support to 'start-ups' and 'fast growers' is provided with regard to regulations. This support comes in the form of so-called Formula managers at the participating municipalities and universities.

GrowthPlus Netherlands is established as a network of entrepreneurs from high-growth companies. The **Mastering Growth Programme ([15]) in the Netherlands** is a series of master classes for entrepreneurs on the growth phases of companies. It is organised by the Ministry of Economic Affairs, the De Baak business school ([16]), Port4Growth ([17]) and Syntens, which is the innovation network for SMEs in the Netherlands. It was commissioned by the Ministry of Economic Affairs in 2004 to develop a programme of assistance for growing high-tech start-ups. In pursuit of that aim, the organisation has conducted interviews with representatives from high-growth companies and has set up two so-called 'Mutual Learning Circles' for such businesses to test its approach. Based on the outcome of the experiment, a programme for high-grow start-ups has been set up in which companies will be coached and guided. In addition, 120 companies will participate yearly in what are known as 'Mutual Learning Circles'. These Circles are part of the Mastering Growth Programme.

Addressing the preconditions for successful growth, this consists of four unique master classes tailored to companies at various stages of their development:

- regional Mutual Learning Circles for companies with 5 to15 employees;
- regional Emerging Growth Masterclasses for companies with 15 to 35 employees;
- national Fast Growth Masterclasses for companies with more than 35 employees;

[15] See www.debaak.nl/en/courses/masteringgrowth online.
[16] De Baak is the management centre of the employers' federation VNO-NCW.
[17] See www.port4growth.nl/ online.

- invitational Masterclasses for Growth for companies with more than 250 employees.

These master classes pay particular attention to the entrepreneur's role and influence in the growth of their company, deal with topics like finance, and address vision, strategy, culture and leadership roles. The master classes provide an informal — but not casual — meeting place for entrepreneurs where they can learn from one another. The interactive nature of the programme means that the classes are led by as well as being attended by entrepreneurs. The theme of each session is introduced by a Dutch or international guest speaker with practical experience, and there is also a tutor on hand to provide the context, theory and supervision needed to stimulate the learning process. Attracting participants has been made a priority, since that proved a stumbling block with previous initiatives of this kind.

The **Gateway2Investment (g2i)** programme was started in London in 2005. The programme helps innovative firms become 'investment-ready' through a three-stage program that involves self-assessment, training, and mentoring. All 42 universities in London participate in this very successful programme led by Grant Thornton and financed by the London Development Agency. The programme consists of three stages; after each step, some firms are selected for more comprehensive support in the next step. The programme starts with entrepreneurs making a self-evaluation of their firms' investment readiness. This self-evaluation is aided by the diagnostic software package Gauntlet. Later-stage support is provided through individual and group workshop sessions as well as through mentoring sessions where investment propositions and business plans are developed, for instance. No grants are given out, but the aim of the programme is to aid participating companies to become viable and attractive investment opportunities for private investors. The programme targets firms in the technology sector (e.g. biotech, ICT, energy, environmental technologies) which have passed the seed stage and are *looking for investors to finance growth.* Typically, companies that participate in the programme are not new. The goal of the programme is that each firm would be expected to raise financing of at least GBP 0.5 million within a 12-month period. The program is a three-year project that is principally financed by the London Development Agency. The financial advisory firm Grant Thornton is the lead delivery partner and thus in charge of the day-to-day running of the programme. Private-sector partners provide advisory services and software at a discounted price or for free, which reduces costs. The budget for the three-year period from 2005 to 2008 is approximately EUR 2 million in total. There are now 185 companies listed as supported by the organisation (http://www.g2i.org/directory/index/1/all/Y).

In the beginning of 2007, The Danish Agency for Science, Technology and Innovation completed a tender for a new **'Gazelle-Growth programme**'. The programme is to strengthen innovation and value growth over a period of three years in SMEs with global potential. Within the framework set by the annual state budget, financing of the organisation and operation of the programme has been put out to tender. The Danish Agency for Science, Technology and Innovation finances a financial framework of approximately DKK 32 million over a three-year period. The winning consortium has further stated that the consortium's own finances will consist of about DKK 25 million, so that the overall framework of the programme will be around DKK 57 million. The tender will include establishment and handling of the programme's secretariat function. Through directed international consultancy, training and networking activities, the programme must ensure that SMEs exploit their innovation and growth potential in the global market. The programme is based on finding 40 to 50 enterprises, each of which shall undergo a directed course of appropriate international activities. In addition, the participating enterprises shall be associated with a national innovation coach with relevant competencies in innovation and enterprise development, so that enterprises can benefit optimally from international activities.

Enterprise Ireland assists companies in two ways, either on a project-by-project basis using specific measures (e.g. training, mentoring, R&D, venture capital, advice, etc.) or by working

with individual companies using their development model approach (i.e. working to an agreed strategic plan drawing on the measures available as required and permitted under EU State Aid rules). The first approach is open to all manufacturing and internationally traded companies, but the second usually covers about 5% of this total and is by mutual consent. This group of companies tend to be those with high-growth potential. Companies tend to use the services and measures of Enterprise Ireland as they need them, i.e., from time to time, but particularly in their start-up phases and **growth phases, and also when they begin exporting** (Enterprise Ireland have offices in the main markets), when they start investing in R&D, and when they need to significantly increase their R&D investment or invest in R&D capital infrastructure. Large companies tend to make less use of Enterprise Ireland's services than SMEs as they usually have the financial and managerial resources to solve their own problems.

Finally, an incentive of a European and cultural nature relates to awards. They make 'high growth companies' an attractive feature. Such awards, explicit or through listings, are the FD Gazelles award, the Deloitte Fast 50, Europe's 500, and so on. All shine a spotlight on the entrepreneurs behind such businesses, even when they themselves have perhaps not realised that they stand out particularly because their firms are growing much faster than others in their sector. Each ranking scheme uses its own criteria to select its winners.

3.3.5 What are the decisive features for success (and are they are context-specific)?

The measures identified suggest the following ways to proceed.

1. Only technologically advanced countries with relatively big markets have established measures addressing gazelles.
2. Measures supporting gazelles are very recent (all of them starting after 2000, with the exception of Corvenius, which was amended after 2000).
3. The measures studied are mixed in the sense that some of them are applied to firms which declare an intention to grow (subjective criteria), some based on the *ex ante* appraisal of the agencies that implement them (policy judgment) and few set objective measures in the form of target turnover.
4. Measures can be implemented by one agency or by a consortium of agencies and even by a consortium of agencies and private consultancies, and research organisations.
5. The companies considered as gazelles are not start-ups or even necessarily new firms, but firms with a good track record and (subjective or objective) evidence that they have the desire and/or ability to grow further.
6. The support provided addresses mainly strategic issues related to human capital (entrepreneurship, specific skills), coordination of services (offering what appears necessary by consortia of support mechanisms for companies selected as growth firms), and finally interaction through networking either among high-growth companies themselves or between these companies and investment opportunities. This support typically includes hiring qualified employees, and handling management and organisation problems.
7. The budget for such measures is usually high and so is the support for individual projects.

3.3.6 Have any of these measures been evaluated?

As all measures supporting gazelles are very recent, they have not yet been evaluated systematically; however, most of them give a first impression of having met their targets.

3.3.7 Specific circumstances

Evidence from the US shows just how quickly — even dramatically — growth of small firms can be. Just 4 firms (Microsoft, Dell, MCI and Cisco systems), which had only been in business for less than 20 years had a combined market valuation of 13% of US US gross value added in 1999 (Jovanovic 2001) (as in INNO GRIPS 2006). Other companies that are in markets considered as traditional have also demonstrated tremendous success in the US (Starbucks is an example). A major concern for European policy makers, however, is that this level of growth appears unlikely inside the European Union. A challenge European policy makers may set themselves is to create conditions where this kind of growth of firms can take place.

Specific circumstances refer mainly to:

- the existence of big (national, export or combined) markets;
- entrepreneurial skills;
- a favourable entrepreneurial climate;
- an enabling macroeconomic environment.

Innovation policies can only affect entrepreneurial skills directly and markets (through commercialisation and internationalisation) indirectly. They can also gradually effect a change in the entrepreneurial climate. The concluding section explores the best ways in which to do so and at which level.

3.3.8 Conclusions and recommendations

High-growth firms are a target for economic policy but they are difficult to define, identify *ex ante* and support. This is why most countries hope to build a basis through the creation of many start-ups, some of which will grow into gazelles. Support measures addressing the specific market segment have only recently and tentatively begun to emerge. Two types of measures have been adopted.

1. *Generic intervention*
   This refers to measures supporting start-ups/SME growth in general or NTBFs in particular: this is the typical way in which most Member States approach policies for gazelles. These measures include elimination of regulatory barriers, provision of grants, support for VC and infrastructure in the form of science parks and incubators and all kinds of support for hiring and training human capital, including entrepreneurship courses. *Among these generic measures, those facilitating internationalisation appear to be the most appropriate for the needs of gazelles.* The rationale for this is purely statistical, inspired by the observation that gazelles must be a close to constant share of all start-ups.

   An *inherent danger for generic intervention*, as a tool intending to broaden the basis and generate gazelles, is related to the possibility of diverting attention from the real needs of growth and consolidation. The *scale-up* phase when the growth plans are executed is neglected, and companies with the potential for growth are acquired rather than growing.

2. *Intervention addressing Gazelles directly*
   Few countries, namely Finland, the Netherlands, the UK, France, Denmark, Ireland and (in the near future) Norway have adopted specific measures giving additional incentives for rapidly growing young companies. They are characterised by the fact that *growth rates are within the eligibility criteria for support.* Growth rates may be perceived by the entrepreneurs (subjective), perceived by the policy makers, or follow 'objectivised' criteria.

Here the inherent danger is government failure. These measures take on an *ex ante* 'picking winners' character a great deal, which creates the risk of substituting market failure with government failure. Good policies are horizontal in nature, and the best companies emerge under competitive conditions. Whatever the measures adopted, it is crucial to refrain from substituting entrepreneurial skills with long-term government support. The intervention should play a short-term catalytic role and not carry on beyond specific phases.

Based on the above analysis the following recommendations can be made.

At national level (or regional for bigger federal countries)

- It is advised that countries with a favourable macroeconomic environment adopt some measures that address the needs of the growth phase of companies; generic measures are not enough. It is, however, unlikely that such measures can succeed in smaller countries or markets (such as the Baltic Republics, Cyprus, Luxembourg) or in less competitive ones unless they are combined with strong export orientation. A medium-sized country or market, of the order of magnitude of the Scandinavian countries or Ireland, represents a critical mass.

- The eligibility criteria can be either subjective (based upon company declaration and business plan), or based on any kind of objective measures (targeted turnover, past growth trends). There are obvious advantages and disadvantages that have been explained above. What should be avoided are general public perceptions as these are most likely to lead to the 'picking winner' policies, with negative consequences for the competitive climate.

- Measures addressing gazelles should primarily target whatever is associated with skill hiring or creation, including both entrepreneurial and technical skills.

- Measures addressing gazelles should support all kinds of interaction: with foreign markets (internationalisation), with capital providers (business angels, venture capitalists, banks) and among themselves.

At European level

- The current awards from private consultants and the press can be formalised and offer EU awards for rapidly growing firms.

In conclusion, it is noted that *radical and distinctly gazelle-oriented measures* in favour of gazelles are feasible, but they have not yet been adopted by any countries. Their nature would necessitate that growth rates are not used as the main eligibility criterion, but rather that they would be different in nature from the usual support measures. One particular measure of this type would be a special (significantly reduced) tax rate for companies growing rapidly. Another one would be a special forum admitting participation only for companies with fast growth rates. More interventions of this kind are feasible, but these have not yet been adopted. They do, however, have one major advantage: as they offer *ex post* rewards, they act as an incentive for growth as well as a support measure for the future.

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Appendix 1: Novel measures of interest in well-performing countries

This list includes measures, which go beyond the traditional measures of capacity building, internationalisation and support to individual actors or their interaction.

1. ***Innovation Vouchers:***
   - NL 47: Innovation Vouchers.
2. ***User-driven innovation:***
   - DK 35: Programme for User-driven innovation
   - FR 61: Facilitated access of innovative SMEs to public procurements in the field of defence
   - FR 63: SME Pact
   - NL 49: Valorisation Grants
   - NL 50: SBIR Pilot
   - NO 2: User driven Research based Innovation
   - CH 10: Innovation for Successful Ageing
   - UK 73: Innovation Platforms.
3. ***New approaches to private-public cooperation:***
   - DK 33: Gazelle Growth programme
   - SE 32: National Industrial Sector Programmes
   - FR 65: Mobilising programmes for industrial innovation (PMII)
   - FR 66: Gazelles Programme
   - NL 53: Smart Mix
   - DE 80: Top Cluster Competition
   - IT 44: Technological Districts
   - IT 65: High Technology Poles
   - FR 63: SME Pact
   - DE 77: Research Bonus
   - SE 61: Cluster Programme
   - NL 51: RAAK - Regional Attention and Action for Knowledge Innovation award mechanisms.
4. ***Social sciences, design and creativity:***
   - AT 66: TRAFO - Transdisciplinary Research Social Sciences, Cultural Studies, and Humanities
   - DK 30: KINO (Creativity and Innovation, New modes of Production and Entertainment Economy)
   - CH 24: GSK-Initiative
   - CH 10: Innovation for Successful Ageing
5. ***Incentives for subsidiaries of multinational companies:***
   - AT 87: Headquarter Strategy
   - IL 19: Support for R&D transfer from multinational technology companies to their Israeli subsidiaries.