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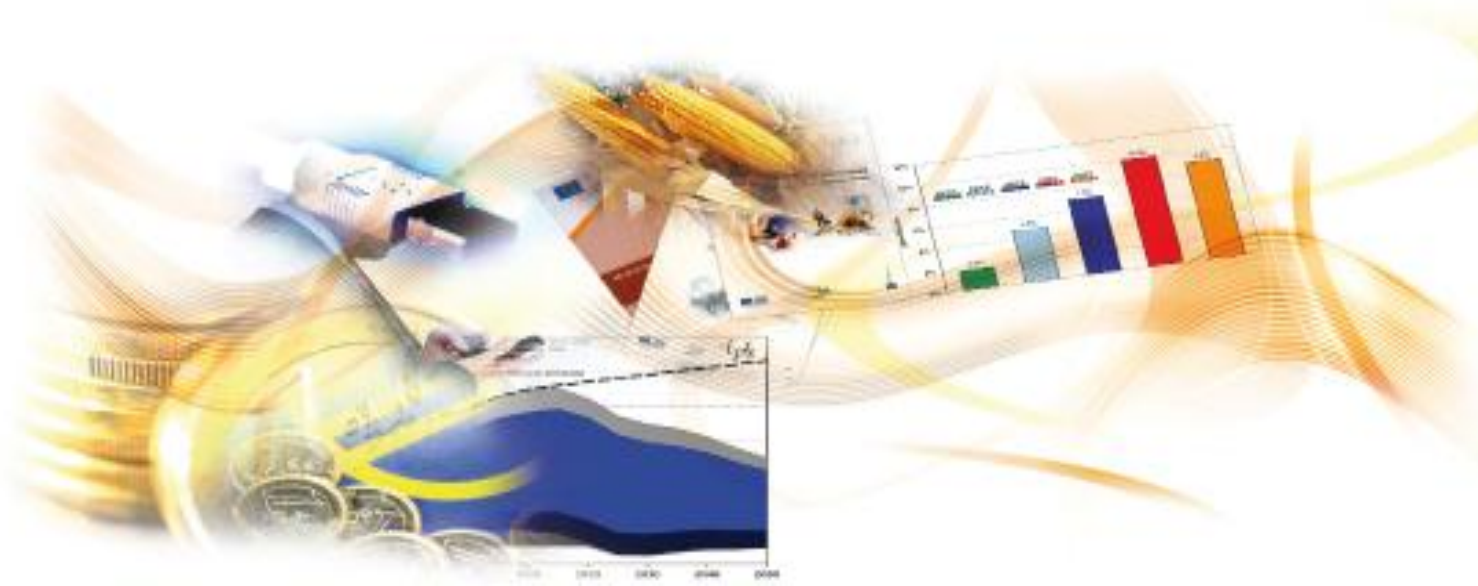

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The goals of smart specialisation

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Abstract

Smart specialisation is an innovative policy concept which emphasizes the principle of prioritisation in a *vertical* logic (to favour some technologies, fields, population of firms) and defines a method to identify such desirable areas for innovation policy intervention. Its rationale involves both *the fact* that, even in the information age, the logic of specialisation is intact, particularly for small entities such as regional economies in Europe and *the argument* that the task of identification (of what should be prioritised) is very difficult and therefore needs a sophisticated policy design.

Smart specialisation is not a planning doctrine that requires a region to specialise in a particular set of industries. Instead, it seeks robust and transparent means for nominating those new activities, at regional level, that aim at exploring and discovering new technological and market opportunities and at opening thereby new domains for constructing regional competitive advantages. Thus, rather than offering a method for determining if a hypothetical region has a "strength" in a particular set of activities, e.g., tourism and fisheries, the crucial question is whether that region would benefit from and should specialise in certain R&D and innovation projects in some lead activities such as tourism or fisheries.

With this policy brief, it is our aim to set out a coherent vision of the *goals* of the policy approach that is evoked by the term *smart specialisation*. A second policy brief will be soon published and will explore the requirements and implications of operationalising that conceptualisation.

[a] The views expressed are purely those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.

1 – Towards a new architecture for regional innovation strategy

A regional strategy for innovation traditionally consists mainly of *horizontal* measures and *neutral* policy aimed at improving general framework conditions and capabilities (good universities, human capital, intellectual property rights, research and ICT infrastructure, competition and openness, and so on).[1] The new strategy, now defined as a key component of the future cohesion policy of the EU, retains this emphasis on horizontal measures but adds a new 'logic' about smart specialisation. Smart specialisation centres on a more *vertical* and *non-neutral* logic of intervention; that is to say a process of identification and selection of desirable areas for intervention, implying choices of technologies, fields, sub-systems that could be favoured within the framework of the regional policy.

This new concern with more vertical and non-neutral choices, which are supposed to drive certain specialisation effects, is an important and welcome evolution. It is particularly welcome in the information age, because the logic of specialisation is intact. Significant returns to size and critical mass in R&D and other innovation-related activities are empirically identified in numerous academic papers.[2] Although based on different methods and illustrating various dimensions of inventive and innovative activities, all this empirical evidence says the same thing: there are substantial indivisibilities in knowledge production at both micro and macro levels. Gains from specialisation are central in R&D; even the ability to capture knowledge spillovers generated by others depends on the existence of a sufficiently large R&D sector in close proximity. Small is not necessarily more beautiful in the information age. If you are small, you are not in a good position to benefit from returns to size and so you have to be smarter. Concentrating resources in a few domains and focusing efforts generate size and critical mass effects that will not arise if you do a little of everything. It is also clear that focusing and concentrating resources on a limited number of activities is probably not enough and will not create any efficiency if the choices of the activities are rather conservative and imitative. In such cases, regions compete for the same resources, with none making any significant impact.[3] In short, regions should practise resource concentration and focus by developing distinctive and original areas of specialisation. "They need to particularise themselves" ![4]

However, prioritising certain technologies or domains always entails a risk because this implies predicting the future development of technologies and markets. Horizontal policies might be difficult to achieve but the risk of being wrong is minimized; i.e. the *identification* of what to do is not so difficult (everybody knows about the direct and indirect framework conditions to foster innovation). In contrast, the *identification* of desirable areas of intervention in a more vertical fashion – what technology, what sub-systems – is extremely difficult and entails a great risk. Business as usual strategies to minimise these risks are of two sorts:

i. "café para todos" (!): politicians like to spread the money over all constituencies and dislike having to make choices between them. However in such a case, no serious prioritisation can be expected.
ii. imitating other regions (or California!), so that if the choices are wrong and failures occur, at least these are failures that all the other regions will experience.

[1] A neutral policy is a policy that does not select projects according to preferred fields or any such criteria, but responds to demands that arise spontaneously from industry (definition taken from Trajtenberg, 2002).
[2] See for example: Henderson and Cockburn, 1996; Agrawal *et al*. (2010); Agrawal and Cockburn (2002); and Trajtenberg (2002).
[3] For an analytical development of this argument, see David (1998).
[4] Oral communication by Paul David, *Knowledge for Growth* meeting.

Smart specialisation is both a *policy objective* to force regions and countries to take such risks and a *process* to help policy-makers to identify domains and activities for potential specialisation. The difficult policy challenge facing smart specialisation is to emphasise the vertical logic of prioritisation while avoiding the government failures usually associated with the top-down and centralised bureaucratic processes of technology choices and selection. How to prioritise and favour some R&D and technological activities, some sub-systems or some fields, while not dissipating the extraordinary power of market-driven resource allocation in boosting decentralised entrepreneurial experiments? Vertical prioritisation is difficult; this is why smart specialisation is about defining a method to help policy-makers identify desirable areas for innovation policy intervention.[5]

2- On the process and procedures of smart specialisation

The central insight of smart specialisation is that, beyond the horizontal programmes essential to improve framework conditions and general capabilities, it is crucial to set priorities. Resources should be concentrated in specially selected domains dealing, with particular kinds of technology, field, disciplines, sub-systems within a sector or at the interstices of different sectors.

Activities that –

i. show potential - they are new, aim at experimenting and discovering technological and market opportunities and have the potential to provide learning spillovers to others in the economy – and;
ii. have scale and agglomeration economies or produce the characteristics of coordination failures (profitable activities can fail to develop unless both upstream and downstream investments are made simultaneously)

– are natural candidates for prioritisation. However principles i) and ii) are very general and identifying new activities as priorities in real life is no trivial matter. Let's try to be more specific! At least five policy principles are important. They have been conceptualized and studied, to some extent, in the *New Industrial Policy* literature (Rodrik, 2004; Hausmann and Rodrik, 2003; Aghion *et al*., 2011; and Trajtenberg, 2002) but have yet to be addressed in a very systematic way.

Granularity (principle n°1)

The level at which priorities are identified, assessed and supported should not be too high, otherwise smart specialisation transforms itself into a sectoral prioritisation and - as stressed many times - there is no rationale to prioritise *sectors* in terms of innovation policy. Sectoral level prioritisation is what old-fashioned industrial policy did, based on a very weak and controversial rationale, particularly in the area of innovation policy

However, intervention at too detailed a level would transform smart specialisation into a horizontal policy via which all micro-projects of some merit would be supported (a task usually done by R&D tax credit systems or programmes of R&D subsidies targeting the whole population of firms).

[5] See Foray *et al*. (2009).

The point here is to identify the right level, between sectors and very micro-activities, at which it is possible to observe in detail the pieces of the knowledge economy that a region can take as a basis for smart specialisation. The relevant level is of "mid-grained" granularity. At this level:

- new activities/projects involve groups of firms and other (research) partners;
- the aim is to explore a new domain of (technological and market) opportunities;
- there is potentially a certain weight and a high significance relative to the regional economy (in terms of the kind of structural changes it is likely to generate).

An example is the case of companies exploring the potentials of nanotech to improve the operational efficiency of the pulp & paper industry (Finland). In such a case, the priority is not the pulp and paper sector as a whole, but rather the activity involving the development of nanotech applications for the pulp and paper industry. In the case of plastics firms exploring diversification from the car industry to biomedical innovations (Basque Country), it is not the plastic industry that is prioritised as such but the activity of exploring diversification opportunities towards biomedical applications. In the case of automotive subcontractors exploring diversification towards new sectors (British Midlands), again what should be prioritised is not the whole sub-contracting sector but the activity of exploring a transition path from the car industry towards new markets.[6]

What governments would support in these cases is neither whole sectors nor single firms but the growth of *new activities*. The notion of a *new activity* is somewhat fuzzy. Of course economic activities take place at firm level, but the essence of smart specialisation –as well as of any kind of new industrial policy[7] – is not to favour one particular firm but to support the development of collective action and experience aiming at exploring, experimenting and discovering new opportunities. Targeting the development of new activities as defined above allows the government to achieve two things through the same policy: it (indirectly) improves the general performance of the sector, while at the same time building capabilities and expanding the knowledge base towards new fields (e.g. the development of nano/bio applications etc.).

Entrepreneurial discovery (principle n°2)

How are the new activities generated? From what sort of initiatives do they come from? Smart specialisation involves a self-discovery or entrepreneurial discovery process[8] that reveals what a country or region does/will do best in terms of R&D and innovation. There is always an element of gambling and risk in any policy aimed at identifying and prioritising the firms, technologies or sectors to be supported; and the best bet is entrepreneurial trial and error. This principle is so important that any model that did not include this provision would have an entirely different character. Its importance lies in the association of two words: *entrepreneurial* and *discovery*.

Entrepreneurial…

Priorities will be identified where and when opportunities are discovered by entrepreneurs. Prioritisation is no longer the role of the omniscient planner but involves an interactive process, in

[6] These examples come from the following case studies: Nikulainen (2008); Navarro *et al.* (2011); MacNeill and Bailey (2008).

[7] See Aghion et al. (2011).

[8] The notion of "entrepreneurial discovery" used in the smart specialisation framework draws on works in development economics, in particular Hausman and Rodrik's view of development as "a self-discovery process", see Hausmann and Rodrik (2003).

which the private sector is discovering and producing information about new activities, and the government assesses potential and then empowers those actors who are more capable of realising this potential (Rodrik, 2004).

This principle allows a clear-cut distinction to be made between the smart specialisation approach and older policy style that involved centralised or indicative planning methods for identifying industrial development priorities. These old approaches to the problem of prioritisation and resource concentration involved formal exercises based on rational and robust theories (inter-sectoral matrixes, technological interdependencies and hierarchical structures, technological complexities). They were, however, by their very nature, driven by preconceptions regarding industrial priorities and technological opportunities. Such approaches, which claimed to be very scientific and rational in their ways of identifying priorities, targets and objectives, were actually often very naïve because they excluded knowledge essential for success - entrepreneurial knowledge.[9]

Entrepreneurs in the broadest sense (innovative firms, research leaders in higher education institutions, independent inventors and innovators) are in the best position to discover the domains of R&D and innovation in which a region is likely to excel given its existing capabilities and productive assets. Entrepreneurial knowledge is most often distributed within a regional system. Some pieces of this knowledge are also likely to be located elsewhere. Boosting entrepreneurial discovery as a policy challenge implies therefore building external organisations of connections with universities, laboratories, suppliers, users, in order to integrate and structure this divided and dispersed knowledge.

…discovery

We are talking of entrepreneurial *discovery*, not entrepreneurial *innovation*. This means that the notion of *entrepreneurial discovery* is not only important to emphasize the bottom-up/decentralized logic of the policy process and thereby to oblige policy makers to design and implement modern governance mechanisms. It is also crucial to introduce a central distinction between "innovation" and "discoveries". What will matter and will need to be identified and supported as vertical priorities are not "simple" innovations undertaken by individual firms. Horizontal policies are just designed to subsidise the costs of R&D and innovation and incentivise any potential innovator and "good projects". Vertical policies need to target activities aiming at exploring, experimenting and learning about what should be done in the future within one sector or between different sectors in terms of R&D and innovation. Indeed, the entrepreneurial *discovery* that drives the process of smart specialisation is not simply the advent of an innovation but the deployment and variation of innovative ideas in a specialised area that generate knowledge about the future economic value of a possible direction of change.[10]

[9] Entrepreneurial knowledge involves much more than knowledge about science and techniques. Rather, it combines and relates such knowledge about science, technology and engineering with knowledge of market growth potential, potential competitors as well as the whole set of inputs and services required for launching a new activity.

[10] To the best of our knowledge, the earliest economic conceptualisation of 'discovery' as opposed to innovation is to be found in the works that Hirshleifer devoted to knowledge and information in the early 70s. In his works he developed a formal expression of *discovery information* as a compound event A which consists of the joint happenings: "state a is true (something is possible)" and "this fact is successfully exploited (what is possible is created)". The first event has a probability ∏a while the second event has a

The cases mentioned above (in Finland, Basque Country and British Midlands) do indeed describe entrepreneurial explorations, experiments and discoveries (not simple innovations) which are about the complementarities between a general purpose technology (or a key enabling technology) application and a traditional sector (the case of pulp and paper) or about a transition path from an existing set of collective capabilities to the foundations of a new business or about potential economies of scope between two different activities. Such discoveries open a new domain potentially rich in innovations and learning spillovers.

Spillovers

Discoveries are characterised by a strong learning dimension. The social value of the discovery is that it informs the whole system that a particular domain of R&D and innovation is likely to create new opportunities for the regional economy. This is not the standard model, whereby an innovator excludes others from the use of the innovation in order to appropriate the largest fraction of the benefits. According to Hirshleifer (1971), public information about the discovery (about $\prod a$, see footnote 9 below) is socially valuable in redirecting productive decisions. Discoveries and subsequent emerging activities have the potential to provide learning spillovers to other agents in the regional economy. Thus, as the next policy brief will further elaborate, the reward for entrepreneurial discoveries has to be structured in such a way that it will maximize these spillovers.

While entrepreneurial discovery signifies the opening of exploitation opportunities, entry constitutes the confirmation that others see this discovery as meaningful. When the initial experiment and discovery are successful and diffused, other agents are induced to shift investments away from older domains with less potential for growth than the new one. Entry is a key ingredient of smart specialisation so that agglomeration externalities can be realised: the discovery of a potential domain in which a region could become a leader should very quickly result in multiple entrants to the new activity. This is the onset of the clustering phase of a smart specialisation process.

Structural changes

The potential success of discoveries and new activities that aim at exploring and experimenting with a new domain of opportunities will ultimately translate into some kind of structural changes within the economy. The outcome of the process is thus much more than a "simple" technological innovation but rather a structural evolution of the whole regional economy.

Structural changes as the main outcome of a smart specialisation process invariably involve some kind of related diversification, a process that builds upon existing capabilities and industrial knowledge and that is animated by the development of R&D and innovation activities. In other words, structural evolution is an accumulative process that links the present and future strengths of a regional economy in a particular domain of activity and knowledge. Different logics of related diversification may be identified:

- Transition is characterised by a new domain emerging from an existing industrial commons (a collection of R&D, engineering, and manufacturing capabilities that sustain innovation).

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probability $\prod A$ with $\prod a > \prod A$. The discovery process provides information about $\prod a$ (something is possible (innovations) that will happen with a probability $\prod A$. See Hirshleifer (1971).

- Modernisation is manifest when the development of specific applications of a general-purpose technology produces a significant impact on the efficiency and quality of an existing (often traditional) sector.
- Diversification, in a narrow sense, is a third pattern. In such cases the discovery concerns potential synergies (economies of scope, spillovers) that are likely to materialise between an existing activity and a new one. Such synergies make the move towards the new activity attractive and profitable.

We can see that, in general, what are discovered as future priorities are those activities where innovative projects complement existing productive assets. The pulp & paper/nanotechnology case exemplifies a process of modernisation of a traditional industry. The plastics/medtech case exemplifies a process of diversification or transition from an existing set of capabilities to a new business. All these cases involve the generation of related variety (Frenken *et al.,* 2007).
However, a last pattern is also possible; it involves the radical foundation of a domain. This case does not fall into the related diversification pattern and involves the opening of exploitation opportunities not related with any existing productive assets.

Linking the two first principles of a smart specialisation policy (granularity and entrepreneurial discovery) leads to the following statement: setting priorities in a smart specialisation perspective involves identifying (and also constructing) those entrepreneurial discovery projects or new activities aiming at exploring, experimenting with and learning what an industry or subsystem should do in terms of innovation and R&D to improve its situation.

Priorities emerging today will not be supported forever (principle n° 3)

While at *t0* some priorities emerge and subsequent activities will be supported, it is expected that three or four years later other discoveries will be made in other parts of the regional system and the subsequent emerging activities will also be supported. This implies that the now "old" priorities should no longer be part of the smart specialisation strategy. Rodrik (2004) suggests the design of some kind of sunset clause for withdrawing support after an appropriate amount of time so that new priorities can be funded. The rationale is very simple: after four or five years, 'new activities' are no longer new. Whether they have failed or whether they have successfully reached maturity, they should no longer be a priority for the smart specialisation strategy. Smart specialisation entails strategic and specialised diversification. This principle is important to help policy makers make choices and decide priorities. These choices are not so difficult since activities not currently selected, still retain a chance of being supported in the future.

Smart specialisation is an inclusive strategy (principle n° 4)

Within the regional economy, different sub-systems (sectors, clusters) perform very differently. It would be easy to look only at the most dynamic and productive part of the economy to search for entrepreneurial discoveries and select priorities. However this would represent a quite narrow and exclusive view of smart specialisation. This also represents an inefficient process of resource allocation since it is precisely the less dynamic parts of the economy that desperately need structural changes (modernisation, diversification or transition), and therefore to be part of the smart specialisation strategy. As E.Phelps argues: "*While dynamism is crucial, we want dynamism*

with economic justice – with what I call economic inclusion. It means drawing companies and people into the economic sector of a modern economy, where new ideas for new processes and products are conceived and experimented"(Phelps, 2012). Smart specialisation needs to be inclusive. This does not mean that the strategy will support a project in every sector (the last word is given to the entrepreneurial discoveries!) but inclusive smart specialisation means giving every sector a chance to be present in the strategy through a good project. Inclusiveness will imply different paces and tempo of the policy because identifying and prioritizing good projects in the less dynamic parts of the economy will be more difficult and more costly than in the most dynamic parts. This practical dimension of implementation will be further developed in the next policy brief.

The experimental nature of the policy and the need for evaluation (principle n° 5)

Clear benchmarks and criteria for success and failures are needed. Because of its nature this policy is experimental: it is the nature of entrepreneurial discovery that not all investments in new activities will pay off. Evaluation is therefore a central policy task so that the support of a particular line of capability formation will not be discontinued too early nor continued so long that subsidies are wasted on non-viable projects.

3 – Goals and metrics

It is now possible to identify the precise goals of smart specialisation and to propose how to quantify progress towards them.

Goals

The principles that form the baseline of the policy process make it very similar to the agenda of the so-called new industrial policy.

The following key words –

- *non-neutral* policy,
- keeping market forces working (*entrepreneurial discovery*),
- *interactive process* between policy and the private sector,
- *activity* as the right level of intervention,
- *evolving* priorities,
- *experimental* nature of policy,
- what is important here is the *process* that helps reveal areas of desirable interventions

– compose the frame of reference and from this perspective a smart specialisation strategy is just a good economic policy of the type that even mainstream economists could prescribe.[11] From this it follows that the main objectives of a smart specialisation policy are not about generating technological uniformity and mono-culture, nor about prioritising sectors or eliminating areas of activities.

On the contrary, smart specialisation goals involve:

[11] See Rodrik (2004).

i. facilitating the emergence and early growth of new activities which are potentially rich in innovation and spillovers;
ii. diversifying regional systems through the generation of new options;
iii. generating critical mass, critical networks, critical clusters within a diversified system.

The relevance of goals for different types of region.

Smart specialisation principles and goals provide strategies and roles for any region. Indeed, the concept is built around the fact that there is not only *one game in town* in terms of R&D and innovation. Rather there are many other kinds of productive and potentially beneficial activities apart from the invention of fundamental knowledge needed for the development of general purpose technologies and tools (GPTs) such as information and communication technology (ICT) or biotechnology.[12] There are in fact different logics or orders of innovation (Bresnahan, 2010; Bresnahan and Trajtenberg, 1995). In other words, innovation often involves the development of applications of a GPT which has been invented elsewhere. Some regions can indeed specialise in the invention of the GPT while others will invest in the 'co-invention' of applications to address particular problems of quality and productivity in one or a few important sectors of their economies.

...for followers…

Co-invention' is an important notion here. The very act of adopting some ICTs (or any other GPTs) to improve operational efficiency or product quality in a given sector of industry or service is by no means a simple task. ICT applications are not ready and waiting on the shelf for new users. The co-invention of applications involves a great deal of R&D, design and redesign, i.e. a collection of knowledge-driven activities. Smart specialisation therefore implies rejecting the principle of a sharp division of labour between knowledge producers and knowledge users. All regions face challenges in terms of improving the operational efficiency and product quality in their business and industries and making these improvements is often a matter of R&D, capabilities development and innovation which generates a certain kind of structural change (e.g. "modernisation" or "capabilities upgrading").

The smart specialisation strategy seeks to avoid petrifying relative positions between followers and leaders with the less advanced regions being locked in to the development of applications and incremental innovations. Of course smart specialisation does not have magical properties to transform laggards into global leaders. However, at minimum, a smart specialisation strategy transforms less advanced regions into good followers: a region in transition which is building capabilities and is agglomerating knowledge resources in a certain domain of application, enabling it to capture knowledge spillovers from the leaders (those who are inventing the basic technology), to attract further knowledge assets and to develop an ecosystem of innovation with the prospect and the realistic hope of becoming a leader! A leader? Yes but a leader not in inventing the generic technology but in co-inventing specific applications (for example ICTs applied to logistics or biotechnology applications for monitoring agricultural production).

[12] We use here the concept of GPT drawing on the academic literature in the economics and econometrics of innovation and growth (see footnote 15). This concept is rather similar to the notion of KETs (key enabling technology) that has been popularized by the EC.

This means that the follower regions and the firms within them, by designing and implementing a smart specialisation strategy, become part of a more realistic and practicable competitive environment -- defining an arena of competition in which the players (other regions with similar strategies) are more symmetrically endowed, and a viable market niche can be created that will not be quickly eroded away by the entry of larger external competitors.

..and leaders

Perhaps the best regions or countries have super-efficient systems in which discoveries are made continuously and good framework conditions enable new activities to grow well so that strategic diversification is happening at any time. Silicon Valley, for example, is well equipped to catch the new waves of opportunities because of its "innovation habitat". It is a habitat that is good at incubating not only IT start ups. Maybe! However, in most cases of successful regions, the success of today is not a guarantee of success for tomorrow. Successful clusters are not protected against the disease of the routinisation of innovation, creative myopia and collective inertia. Many historical cases tell the same story of very successful clusters or regions not capable of re-inventing themselves when new waves of technologies and market opportunities come. Moreover, when innovation is concentrated in a single large firm, it is proven that such a firm and its employees suffer from creative myopia. They are not inclined to look outside, to learn from others (Agrawal *et al.,* 2009).

Thus a relevant question for these leading regions is the following: are there enough experiments and discoveries beyond the current innovative routines? In leading regions too, entrepreneurs exploring new domains beyond and outside the innovation routines need to be identified and supported.

Metrics

Each of the goals of smart specialisation identified above suggests natural metrics for measuring progress. Clearly the measurement part of the smart specialisation agenda is still in progress. The indicators for the above-mentioned goals will have to be somewhat eclectic since the trends and evolutions underlying the three goals are not captured by the standard framework of indicators of knowledge and innovation.

However, the need for data and indicators about smart specialisation is critical. Without metrics and indicators as well as regular data collection, the patterns of smart specialisation strategies will not be discernible and policy makers will be unable to track progress, assess structural transformations and compare strategies. There is therefore a pressing need for further research and development in this area to build a collection of available statistics on several dimensions of smart specialisation.[13] Within the framework of this policy brief, we will limit ourselves to a few key suggestions for further development.

Beyond static approaches aimed at measuring the competitive position of regions in science and technology (patent, publications),[14] checking the correlations between public and private R&D[15] and of course measuring the structures of a regional economy (employment by sectors, etc.), there

[13] Both OECD (DSTI, TIP steering group) and the S3 platform of the IPTS (JRC) are currently deeply involved in the development of a framework of indicators.

[14] See for instance works by Konrad Debaeckere and collaborators.

[15] See for instance works done at IPTS by Xabier Goenega and the team of the S3 platform.

is a need to measure the emerging trends regarding entrepreneurial discoveries, the development of new activities, the diversification of the system and the generation of critical clusters, in other words, measuring progress towards the different goals of smart specialisation.

The need for developing measures is absolutely crucial since the standard indicator framework is likely to be inadequate for some of the evaluation/assessment objectives. This is why an important challenge for applied economists in the area of smart specialisation is to enlarge the scope of empirical material that the economics profession will regard as legitimate, and perhaps even routine, in applied research. This effort is essential if the economics of smart specialisation is to progress beyond the purely abstract, and enable theory to be linked to practice.

4 – Policy dilemmas

The smart specialisation concept brings into increasingly sharp relief three innovation policy dilemmas that are present to some degree in any innovation policy. The articulation of these dilemmas forms the basis of the second part of this work, to be set out in the next policy brief, which deals with more practical issues concerning policy design and implementation.

The space of smart specialisation

What is the right space for the deployment of a smart specialisation strategy? Is it the administrative space of a region or the space in which the relevant resources are available and can be deployed? Neither predefined "regions" nor specific sectors can be used *ex ante* to determine the boundaries of smart specialisation dynamics, as explained above. Whatever we call it – the knowledge ecology or the industrial commons –the collective R&D, engineering and manufacturing capabilities that sustain innovation are not necessarily deployed and contained within strict regional boundaries. Their development and evolution is likely to defy administrative frontiers. In other words, resources in the knowledge economy are not immobile and specific to each region. Extra-regional entrepreneurship, like extra-regional finance, and skilled "business services" can initiate and carry on new activities in regions where those factors of production are scarce. By the same token, such extra-regional resources (including research services) can develop and expand the capacity of small regional enterprises that have been launched by local entrepreneurs. This raises the question of the larger ecology of innovation to which the particular regional system belongs.

The time of smart specialisation

Policy makers who are willing to influence the process through which the regional economy will develop some new specialisation will face a particular class of the so-called Blind Giant's Quandary problem, meaning that public agencies have the greatest opportunity to influence future growth trajectory during the time when they know least about what should be done (David, 2005). There is thus a need to identify (and act during) the windows of opportunity in which interventions may amplify virtuous developments. The identification of activities to be prioritised requires, therefore, that evaluation and subsequent decisions (support) should happen at a certain point in the development cycle where degrees of local commitment and development have already occurred (to avoid the lottery of the very early stages).

Changing priorities and the continuity of policy

According to our principle 3, priorities are not selected for ever. The goal is to diversify the system through the generation of new options. It is therefore crucial to revisit regularly the portfolio of prioritised activities. After a certain period of time, the 'old' priorities funded under the smart specialisation strategy should be withdrawn the strategy so that new priorities can be supported (in a context of limited public budget).

Nevertheless, emergence and early growth do require time. The support of new activities needs some kind of continuity in funding R&D and other innovation-related activities (5 years?). This dilemma is, however, not as severe as it might appear at first glance. Changing priorities do not mean that the 'old' activity will not find funding any more to finance their R&D and innovation activities. Rather, they will just move from the smart specialisation instrument to the general regional innovation strategy that provides other (more horizontal) funding instruments. In that sense the smart specialisation strategy and the regional innovation strategy require strong complementarity.

5 - Conclusions

A smart specialisation strategy is a good policy. It attempts to make two critical and somewhat conflicting requirements compatible: identifying priorities in a vertical logic (specialisation) and keeping market forces working to reveal domains and areas where priorities should be selected (smart). However implementing such a policy is by no means a trivial matter. It will require good institutions and strong policy capabilities at regional level. A second policy brief will be soon published and will precisely deal with translating the objectives and principles described here at a certain level of abstraction to the level of practical implementation: a set of tools and programmes that will provide an operational content to the concept.

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Abstract

Smart specialisation is an innovative policy concept which emphasizes the principle of prioritisation in a *vertical* logic (to favour some technologies, fields, population of firms) and defines a method to identify such desirable areas for innovation policy intervention. Its rationale involves both *the fact* that, even in the information age, the logic of specialisation is intact, particularly for small entities such as regional economies in Europe and *the argument* that the task of identification (of what should be prioritised) is very difficult and therefore needs a sophisticated policy design. Smart specialisation is not a planning doctrine that requires a region to specialise in a particular set of industries. Instead, it seeks robust and transparent means for nominating those new activities, at regional level, that aim at exploring and discovering new technological and market opportunities and at opening thereby new domains for constructing regional competitive advantages. Thus, rather than offering a method for determining if a hypothetical region has a "strength" in a particular set of activities, e.g., tourism and fisheries, the crucial question is whether that region would benefit from and should specialise in certain R&D and innovation projects in some lead activities such as tourism or fisheries. With this policy brief, it is our aim to set out a coherent vision of the *goals* of the policy approach that is evoked by the term *smart specialisation*. A second policy brief will be soon published and will explore the requirements and implications of operationalising that conceptualisation.

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