

Policy dynamics and challenges for the Upper Rhine

Cross-border integration of regional innovation systems and smart specialisation strategies

Emmanuel Muller^{1,2}, Andrea Zenker², Miriam Hufnagl², Jean-Alain Héraud¹, Esther Schnabl²

¹: Bureau d'Economie Théorique et Appliquée (BETA), Université de Strasbourg (France)

²: Fraunhofer Institute for Systems and Innovation Research ISI, Karlsruhe (Germany)

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Introduction

The aim of this paper is to provide new insights into the meaning and implications of the concept of "smart specialization strategy" (S3) by illustrating the specific case of two border regions engaged in a progressive integration process of their innovation systems. The issues addressed concern the conceptual meaning of the S3 process as well as its implications for innovation policy instruments and regional governance.

The S3 concept has recently gained tremendous importance for regional innovation-related policy making. According to the scholars who coined it: "*Smart specialisation is not just for the "best" regions and technology leaders. On the contrary, this concept provides strategies and roles for any regions.*" (Foray et al. 2011, p. 5). Nevertheless, the current debate about S3 seems to indicate that things are not so simple. The conception and application of S3 by most European regions may be seen as a perfect illustration of policy dynamics and complex governance at regional level. In fact, it can be easily assumed that S3-resulting decisions may reframe regional innovation policies and systems and favour – in the best cases – the catalytic role of regional development agencies (RDA) and more generally of regional authorities in charge of innovation support and economic development. According to Foray et al. (2011) S3 as a concept "*has enjoyed a short but very exciting life*" (p. 3) from being a taboo concept to becoming a policy hit. S3 is originally an academic concept which is increasingly applied to regional policies in Europe as it is part of the wider Europe 2020 strategy (European Commission 2010).

At the same time, different expressions of reluctance or uncertainty can be observed in several regions. One possible threat may take the form of possible lock-in situations even if the "spirit" of the S3 is to develop distinctive and original areas of specialisation at regional level; the danger remains that in imitating each other some regions may suffer from the "silly clones' valley" syndrome.

The first section depicts not only the S3 concept in itself but also the implications for the choice of innovation policy instruments - referring in particular to the frame provided by Borrás and Edquist (2013) in terms of "policy mix" design. Those prerequisites allow for the introduction of the case of the Upper Rhine in the second section. Accordingly this section will conceptualize a possible convergence and co-ordination of innovation policies in Alsace and Baden-Württemberg through the formation and application of a S3 concept. The empirical elements encompass: (i) an original online survey (on a European scale) of regions engaged in the S3 process which helps to better characterise the respective positions of Alsace and Baden-Württemberg; (ii) an analysis of the most important policy documents (the so-called "grey literature") on those two regions as well as a set of interviews with the main persons in charge of S3 in the two regions. The final section discusses the results of the empirical investigations in the light of the model of progressive cross-border integration of regional innovation systems developed by Lundquist and Trippl (2009). This section integrates also a recent analysis related to the potential implications of S3 by Baier et al. (2013) and attempts to address specific consequences for cross-border regional innovation led-policies, in particular

with regards to the necessary diversity of areas of investments and excellence but also in terms of challenges related to multi-level governance. The conclusion addresses possible future policy developments and research desiderata.

SECTION I: S3 and choice of innovation policy instruments

Generally policy instruments can be defined as the "set of techniques by which governmental authorities wield their power in attempting to ensure support and effect or prevent social change" (Vedung 1997, p. 21). Furthermore they can also be described as "the "means" through which the "ends" of political life are achieved" (Doern and Phidd 1983, p. 111). With a view to innovation and cohesion policies of the European Union, the aims and foci of "political life" currently traverse significant changes. Ever since the economic crisis has hit the European Union the innovative capacity of the Member States with all its facets – ranging from the sphere of education to entrepreneurial endeavours – seems to turn into the core target of support policies with S3 apparently being the new and upcoming paradigm in this regard. Observably the concept of S3 asks for a different emphasis in the instrument portfolio or policy mix than the European support guidelines within structural funds and framework programmes of the past decades as the following definition points out:

"It should be understood at the outset that the idea of smart specialisation does not call for imposing specialisation through some form of top-down industrial policy that is directed in accord with a pre-conceived "grand plan". Nor should the search for smart specialisation involve a foresight exercise, ordered from a consulting firm. We are suggesting an entrepreneurial process of discovery that can reveal what a country or region does best in terms of science and technology. That is, we are suggesting a learning process to discover the research and innovation domains in which a region can hope to excel. In this learning process, entrepreneurial actors are likely to play leading roles in discovering promising areas of future specialisation, not least because the needed adaptations to local skills, materials, environmental conditions, and market access conditions are unlikely to be able to draw on codified, publicly shared knowledge, and instead will entail gathering localized information and the formation of social capital assets." (Foray et al. 2009, p. 2)

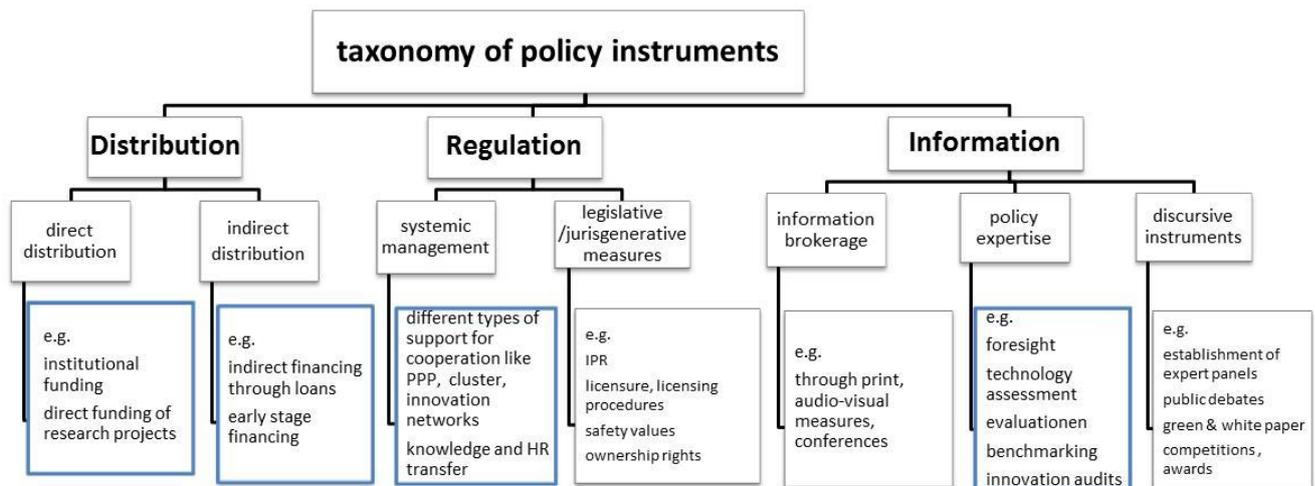
Firstly this statement illustrates quite well the most important challenge for policy makers with regard to the concept. The core idea of S3 – the entrepreneurial process of discovery – urges the entrepreneurial forces of a region to take action and redefines the role of policy support substantially. Additionally the concept acknowledges that regions cannot do everything in terms of developments in science, technology and innovation (STI) and policies so they do need to focus on specific (carefully chosen) domains. In other words, regions should not try to imitate each other but develop distinctive areas of specialisation and then strategically concentrate their policy efforts on those "smart specialisation areas". As such one may consider with the academics that are responsible for this neologism and concept formation (Foray et al. 2011) as well as Baier et al. (2013) that the ideas behind smart specialisation are not entirely new, whereas the concept is strongly expanding its influence to regional policy making. By becoming an ex-ante conditionality for structural funds, the concept is very quickly turning into a dominating paradigm with regards to cohesion policy programmes, although there is hardly any experience whether or not S3 proves to be a valuable driver for growth. Since

there has already been an ongoing debate throughout the past few years about the configuration of structural funds, the dependence of funding on the establishment of S3 concepts can now be seen as another attempt to combine the goals and processes of cohesion policy and innovation policy. The efforts of combining these policy areas and thus the implementation of the relevant instruments have recently been contested by several critics (for instance Bundesministerium für Bildung und Forschung (BMBF) 2010; Council of the European Union 2010; EFI 2011, p. 52). Nevertheless, European regions which are entitled to structural funds are currently setting up their S3 concepts fulfilling EU obligations. Possibly future evaluations might show if the attempt of coupling cohesion and innovation policies is a successful endeavour.

Meanwhile some preliminary conclusions can be drawn from the limited observations so far that applying the credo of S3 holds quite some challenges for policy makers since "The complexity of the process [of S3] resides both in discovering the right domains of future specialisation and fixing the many coordination failures that can prevent emerging trends from becoming real and solid drivers for regional economic growth."(Foray et al. 2011, p. 4)

From the point of view of policy instruments the two consecutive core ideas of S3 – the notion of "entrepreneurial discovery" and "discovering the right domains for future specialisation" – bring up a number of propositions with regard to the instruments that will be chosen and implemented. Most importantly though "the main issue to be addressed by policy is not "what to do" but "how to help agents to discover what to do and how to implement the policy according to what has been discovered"" (Foray et al. 2011, p. 10). In a nutshell, two main fields can consequently be identified for policy action: firstly the application of a portfolio of strategic intelligence measures and learning processes that are associated with the identification "of the right domains" are of significance followed by more traditional support measures for the associated "entrepreneurial discoveries" respectively the distribution of financial and regulative aid in support of these discoveries. A very first careful analysis on smart specialisation policies showed that "it is possible to conclude that the gravity is especially on policies in support of better networking and connectivity among different actors at the sub-national level" to better facilitate the process of discovery (Walendowski 2011, p. 16). The following taxonomy of instruments that are in use in innovation policy points out the most relevant policy tools for implementing the concept of S3 according to the core ideas. The highlighted boxes show that mainly distributive elements as well as support measures for better cooperation and policy expertise are needed for the formulation and implementation of the concept.

Figure 1: Taxonomy of policy instruments used in innovation policy



Source: adapted from Hufnagl (2010, p. 102)

Particularly the latter two categories belong to the group of the so-called "systemic instruments" which "according to Smits and Kuhlmann (2004) [...] are tools that focus on the level of the innovation system instead of focusing on specific parts of innovation systems and support processes that play a crucial role in the management of innovation processes." (Wieczorek and Hekkert 2012, p. 74). As can be seen below, the two core ideas of S3 are reflected in the heuristic (Smits and Kuhlmann 2004, p. 12) propose for systemic instruments which - among other aspects - support the following functions:

- *Providing a platform for learning and experimenting.* Create conditions for various forms of learning such as: learning by doing, learning by using and learning by interacting (Lundvall 1992; Rosenberg 1982).
- *Providing an infrastructure for strategic intelligence.* Identify sources (Technology Assessment, Foresight, Evaluation, Bench Marking), build links between sources, improve accessibility for all relevant actors (Clearing house) and stimulate the development of the capacity to produce strategic information tailored to the needs of actors involved (Kuhlmann et al. 1999).
- *Stimulating demand articulation, strategy and vision development.* Stimulate and facilitate the search for possible applications, develop instruments that support discourse, vision and strategy development.

Apart from the needed "fine tuning" of the inherent dimensions of the instruments (like for instance positive steering through incentives or negative inducement through rules and regulations) the observations so far also depict an additional challenge in their own right: the appropriate addressing of different actors within the regional innovation system. Policy makers are always confronted with the question "which policy instruments to implement at what time?" but when it comes to the formulation of S3 concepts finding answers to the questions "who should we address with our measures? Should there be more emphasis on enterprises?" pose a particular challenge. Evidently the instance of "entrepreneurial discovery" is a process that mainly takes place in entrepreneurial settings like SMEs or large-scale enterprises. But of course also members of higher education institutions or research institutes - mainly with a

focus on applied sciences - show entrepreneurial knowledge and spirit. To exemplify upcoming challenges for actors that are different from firms observations and thoughts by Goddard et al. on the role of universities point out "underlying tensions between regional and academic drivers" (Goddard et al. 2013, p. 93):

"First, the involvement [...] of universities in regional governance and policy making that is required to inform strategic choice. Second, a possible mismatch between the current academic profile of universities in a region – the knowledge domains within which teaching and research is undertaken – and the specific industrial and locational assets of the region which are the focus of smart specialisation. Third, the synergy (or lack of it) between globally defined academic excellence and spatially blind higher education and research policies and geographically bounded regional needs/opportunities. Finally, and underpinning each of the preceding headings are questions about the nature of the university as a 'loosely coupled' institution which has often been 'black boxed in much of the regional development literature and related regional policy and practice.'"(ibid.)

As already mentioned it has always been challenging for policy makers to formulate and implement instruments that take into consideration the particular needs of different regional actors and entities. However, when considering S3 concepts there seems to be another level of complexity and responsibility associated with the right choice of instrument: Since specialising mainly means leaving out other choices respectively focussing on a certain domain, the choice should be well prepared and thought through. This encounter also poses fundamental questions with regard to the right division of labour and legitimacy between the sphere of politics, economics and society at the meta-level that go beyond the scope of S3 concepts and this paper. However, it should be acknowledged that S3 policies might hold upcoming defiance with a view to several aspects: which sphere is the determiner when it comes to choosing the "right domains" within a regional innovation system? Does the portfolio of instruments by the EU acknowledge the different local settings and requirements of the various European regions in need? Evidently to some extent the market potential of "entrepreneurial discoveries" is quite unknown and unforeseeable: do public policies therefore really reflect the required degree of risk awareness? As Foray et al. make clear, if applied wisely, S3 concepts might offer room for being adventurous on the one hand but at the same time create a kind of safety net through considering strength on the national level on the other hand:

"The complexity of the process resides both in discovering the right domains of future specialisation and fixing the many coordination failures that can prevent emerging trends from becoming real and solid drivers for regional economic growth. [...]The discovery process is thus an issue in its own right. If accomplished properly through an entrepreneurial process of discovery (see below), such a process should logically identify not necessarily the hottest domains in nanoscience or biotechnology but rather the domains where new R&D and innovation projects will complement the country's other productive assets to create future domestic capability and interregional comparative advantage." (Foray et al. 2011, p. 4)

SECTION II: The Upper Rhine as a possible convergence and co-ordination of innovation policies in Alsace and Baden-Württemberg

The subsequent analysis considers the results of an on-line survey on the European scale, realized at the Fraunhofer Institute for Systems and Innovation Research ISI. In particular aspects such as the framework conditions impacting S3 processes as well as the level of achievement of those processes were investigated. The survey was realized between July and September 2013 and addressed regional innovation policy-makers, regional governments and partially also consultants who supported their governments in the RIS3 process. A second survey was conducted between May and August 2014, and further telephone interviews enabled more detailed information for selected regions. Basically, the survey questionnaires covered a range of aspects referring to the general framework conditions, the respective state of play related to regional RIS3 processes and the resulting strategies, as well as policy-makers' assessment related to the process of implementing smart specialization strategies in their regions (Kroll et al. 2014; Kroll 2015).

Accordingly to those analyses, it can be easily observed that Germany and France present relatively similar profiles in comparison with other countries. Nevertheless, these observations are related to the national level and aggregate the results of all responding regions in one country.¹ At least it can be stated as a starting point, that Alsace and Baden-Württemberg are both encompassed in countries in which the perceptions and achievements of S3 processes are not radically different at the national level as it is the case when considering Austria and Bulgaria for instance (Kroll et al. 2014; Kroll 2015).

Table 1: an overview of national S3 profiles according to some key dimensions

	AT	DE	FR	ES	PL	GR	BG
Framework Conditions							
Political Ownership	++	+/o	+/o	o	o	--	--
Technical/Human Capacity	++	++	+	+	+	-	--
Professional Capacity	+	+/o	+	o/-	-	--	--
Level of Achievements							
Process within Schedule	head of schedule	mostly in time	more or less	behind schedule	more or less	severely lagging	unclear
Consultation Process	++	++	+	+/o	o/-	o/-	--
Strategy Process	++	+/o	+/o	o	o	-	-

¹ Issue of anonymity does not allow direct comparisons between two different regions.

	AT	DE	FR	ES	PL	GR	BG
Implementation Process	+	+/o	-	o/-	o	--	--
Role of Consultants	limited support	some support	Some support	Strong support	strong	leading role	leading role

Source: adapted from Kroll et al. (2014) and Kroll (2015)

As a consequence, after having considered various overarching topics on the choices of policy instruments and on national situations, it seems necessary that the analysis takes a closer look at two bordering regions and their current innovation policies with regard to S3 concepts. The decision to focus the analysis is mainly to be found in the fact that the level of interactions between the two regions is quite unique at European level. As the next section will show, not only strong economic relations can be observed but also some innovation-policy related connections. This situation is reinforced to a certain extent by historical and cultural links. In fact, on both sides of the Rhine, from Karlsruhe to Strasbourg and Basle, the Upper Rhine Valley constitutes a core region of Europe and has been a focus of cultural and technological revolutions for almost one millennium. In particular, this area was one of the core regions of the European Renaissance. It is still a very innovative region as well as a strong scientific area. Héraud (2011; 2012) has observed that its relative weight in the European scientific production for instance accounts for the global national weight of important scientific nations like Belgium, Austria or Denmark. The specificity of the Upper Rhine area, and maybe its strength, is its polycentric metropolitan nature: linguistic and institutional variety, together with a very old common culture, may constitute a laboratory for S3 application. Furthermore, it might provide a "living lab" to improve the understanding of policy dynamics and policy complexity.

Concerning Alsace, it must be kept in mind that from an overall perspective, France has a long tradition of centralised state governance and that regional autonomy (the so called "*décentralisation*") is a process that has emerged progressively over the past three decades. At the same time, in terms of innovation policy, the French situation can be seen as very specific. During the 1980s and 1990s, the French innovation system was still clearly marked by strong state involvement, corresponding to what could be described as an interventionist philosophy ('technological Colbertism', Larédo and Mustar 2001). In an attempt to broadly characterize innovation in France today, it can be stated that the French innovation system is undergoing profound transformations, coupled with new actors, regulations and frameworks, as well as new ways of implementing priorities. Since France is at the crossroads between centralization and decentralization, its governance system is now very complicated and variable, involving several levels of regional/local actors and national/European institutions and policy frameworks. Unlike federal states, no clear legal distribution of roles is fixed and as a result, complex multi-level/multi-actor processes in the design and implementation of policies can be observed (Muller et al. 2009).

The principle of regional equity, if not equality, has also shaped a distinctive French response to the needs of a competitive, international knowledge-based economy. Networks and clusters of scientific excellence, rather than the concentration of resources per se, have become preferred policy tools, demonstrating equality of opportunity to compete for science resources, if not equality of outcome. This reflects a more gradual evolution in French policy towards equity rather than equality as a precondition for competitiveness: 'equity represents a means of striving for equality within the reasonable limits of efficiency' (Baudelles and Peyrony 2005, p. 109). Baudelles and Peyrony note a changing regional development paradigm in which competition between territories is no longer seen as a zero-sum game, a position supported by the rejection of the notion of 'compensatory solidarity' by the most modern and progressive localities. The recent development of S3 strategies at regional level in France must be analysed and understood in the light of this specific context.

Alsace has today a very strong profile in science and fundamental research (three Nobel Prize laureates are working for the Université de Strasbourg for instance), nevertheless the production of technological knowledge and the rate of breakthrough innovations are rather modest, and the business sector's R&D expenses remain below 1 % of the regional GDP. As in other French regions, it can be stated that the S3 guidelines did not prompt radical changes for Alsace in terms of strategy and implementation. This can be explained by the fact that all French regions had to develop (at the instigation of the European Commission) so-called strategies régionales d'innovation (SRI) between 2006 and 2009. This process had to follow guidelines (designed as "méthode Prager" in the jargon of French regional authorities following the name of the principal instigator) which revealed to be a form of pre-stage for S3 processes.

The situation on the other side of the Rhine is quite different since – unlike France - Germany is a Federal state. In Baden-Württemberg, innovation policy has a long tradition. Important steps were already taken during the 1970s and 1980s with the strategic view to build an effective transfer infrastructure to promote innovation among SMEs.

Stakeholder participation has been an important element of policy making for several years. For example, in the late 1990s Baden-Württemberg implemented the Enquete Commission "Situation and prospects of medium-sized companies, in particular family-owned companies, in Baden-Württemberg". Although fostering innovation activities was only one topic among others, it is important to note that regional dialogue forums were held aiming at discussing relevant issues with SMEs and promotion institutions. Specific regional forums focused on "SME-networks and cooperation" and "innovation, implementation of ICT and new technologies in SMEs". Expert hearings were another approach in order to deepen the understanding of the topic and, in addition, best practices from other German regions and abroad were collected. The results of the Enquete Commission led to changes in public procurement regulations and changes in the law on promotion of SMEs. Dialogue processes were also introduced in connection with Baden-Württemberg's cluster policy in 2007. In 2011, the dialogue-oriented policy approach became a central element of the economic and innovation policy of Baden-Württemberg (see below).

With a specific focus on technology and innovation, in the mid-1980s, Baden-Württemberg implemented the discussion group "Business and Science" that comprised representatives from the private sector and from applied research institutes to assess the technology demand of businesses, mainly SMEs. The implementation of collaborative research projects were among the recommendations. The exchange among policy, science, economy and society was deepened in the 1990s: In 1992, Baden-Württemberg implemented the "Future Commission Economy 2000" ("Zukunftskommission Wirtschaft 2000") which recommended the implementation of an "Advisory Council for Innovation" (Innovationsbeirat) (since 2002, Innovation Forum). The consultation process ended in 2005. Again in 2007, Baden-Württemberg implemented the "Innovation council" (Innovationsrat) which was comprised of 50 persons from leading companies, scientific institutes, culture, sports, media, local districts, churches, trade unions, chambers of commerce, industry and handicrafts, and associations. The primary task of the committee was to efficiently advise the state government in its goal of securing Baden-Württemberg's leadership as the innovation engine of Germany. The recommendations, published in 2010, were well received by the government. They target the cooperation of economy and science, among companies as well as the transfer of knowledge and technology to promote innovation. The committee also recommended that innovation policy should focus on emerging markets and diversification. These recommendations were backed by a report. The study described the economic and technological perspectives of Baden-Württemberg until 2020, thus it provided empirical evidence and also appraised previous expert assessments. The consultants recommended focusing on the following "future fields": sustainable mobility; environmental technologies, renewables and resource efficiency; health and care; and ICT. Later, as described in the coalition agreement, the "future fields" were complemented by the following growth fields: aerospace, creative industries, logistics and Key enabling technologies (KETs) (Bündnis 90/ Die Grünen Baden-Württemberg and SPD Baden-Württemberg 2011; Kroll et al. 2014; Landtag von Baden-Württemberg 2000; Ministerium für Finanzen und Wirtschaft Baden-Württemberg 2013; Staatsministerium Baden-Württemberg (Hrsg.) 2010).

These activities show that Baden-Württemberg utilized strategic approaches to foster innovation activities for three to four decades. Thus, when the RIS requirements were made public, Baden-Württemberg was one of the cases where the already existing elements needed to be put together to describe a coherent strategy. The Ministry of Finance and Economic Affairs in cooperation with the Ministry of Science, Research and Arts, the Ministry for Rural Areas and Customer Protection, and the Ministry for the Environment, Climate and Energy Economy published the Innovation Strategy Baden-Württemberg in mid-2013 documenting the traditions of innovation policy, its aims, challenges, and instruments (Ministerium für Finanzen und Wirtschaft Baden-Württemberg 2013).

Baden-Württemberg goes one step further to develop and implement strategic approaches towards smart specialization at sub-regional level. To this end, the competition RegioWIN was established. It calls sub-regions (i.e., functional regions at about NUTS 3 level) to develop bottom-up strategic approaches towards regional innovation. The competition is divided

into two phases: During the first phase until autumn 2013, the regions are asked to develop a regional strategy concept. In case of a positive jury vote, the candidate regions have to further elaborate their regional development concepts and draft projects. After a second positive jury vote, concrete projects and support measures may be implemented from 2015 onwards. The so-called lighthouse projects may benefit from ERDF funding. In addition, other projects may be supported as well, e.g. within the framework of ESF depending on the specific content. Within the first round, 14 concepts entered the competition.²

Several interviews with policy makers on both sides of the Rhine were conducted in order to gain more details and insights. The main point resulting from those interviews is that if Alsace and Baden-Württemberg are characterised by very different "starting positions" they currently show some common features in terms of innovation policy. Starting in 2011 a dialogue-oriented policy action associating regional companies, chambers of commerce, worker unions, networks and policy makers was introduced in Baden-Württemberg. This dialogue became a central element of the economic and innovation policies of the Land (see Ministerium für Finanzen und Wirtschaft Baden-Württemberg 2013). Baden-Württemberg's dialogue-based policy approach since 2011 has comprised (1) the general economic dialogue (economic exchanges with Chambers, Unions or Associations, etc.) which embraces (2) dialogues in sectors or branches (such as automotive, health industries, Information and communication technologies, creative industries, logistics, aerospace, mechanical engineering), (3) theme-oriented dialogues (for instance concerning skilled labour, vocational training or related to clusters), and (4) regional dialogues (Ministerium für Finanzen und Wirtschaft Baden-Württemberg 2013). Since the development of the Alsatian regional innovation strategy „Oser innover, Être ouvert au monde, Faire des choix" (Région Alsace 2009), substantial progress has been achieved through the smart specialization rules of action. Changes are not only observable on the level of involved stakeholders (a higher share of regional companies is included), but also on the governance and the operational levels. The strategy development more strongly follows a bottom-up philosophy than in previous periods. During the process of conceiving the strategy, Alsatian policy-makers specifically paid attention to the intersection of emerging markets for regional firms and the specific regional competences.

Synthesizing strategy documents in both regions and also referring to regional experts' assessments leads to the conclusion that the process of strategy conception according to the "smart specialization" rationales are based on important previous developments and strategies. In terms of joint strategy building across the French-German border, smart specialization seems to play an important role as instrument generating opportunities for strengthening existing cross-border ties and relations in innovation policy. So far, information exchanges play the most important role. However, the process of conceiving S3 strategies was run in both regions independently, i.e. without setting explicit coordination mechanisms in place. Aligning strategies in region-specific fields of specialization may offer opportunities for future collaboration and, ideally, lead to joint research and innovation efforts in the Upper Rhine re-

² Cf. <http://regiowin.eu/>.

gion. Following an analysis of specialization fields in Alsace and Baden-Württemberg, some fields of convergence can be identified between the two regions. The following table depicts three main areas of convergence that are: (i) green economy; (ii) sustainable mobility and (iii) health (to be understood in a broader meaning). Moreover it is possible to detail those areas in seven fields (see Table 1).

Table 1 : Areas and fields of convergence between Alsace and Baden-Wurttemberg

A. Green Economy
1. Sustainable energy production
2. Energy efficient buildings
3. Circular economy and water-related issues
B. sustainable mobility
4. Optimisation of combustion engines
5. Hybrid- und electric vehicles / Sustainable mobility systems and services
C. Health and wellness
6. Administration, infrastructure and E-Health
7. Innovative treatment processes and new drugs

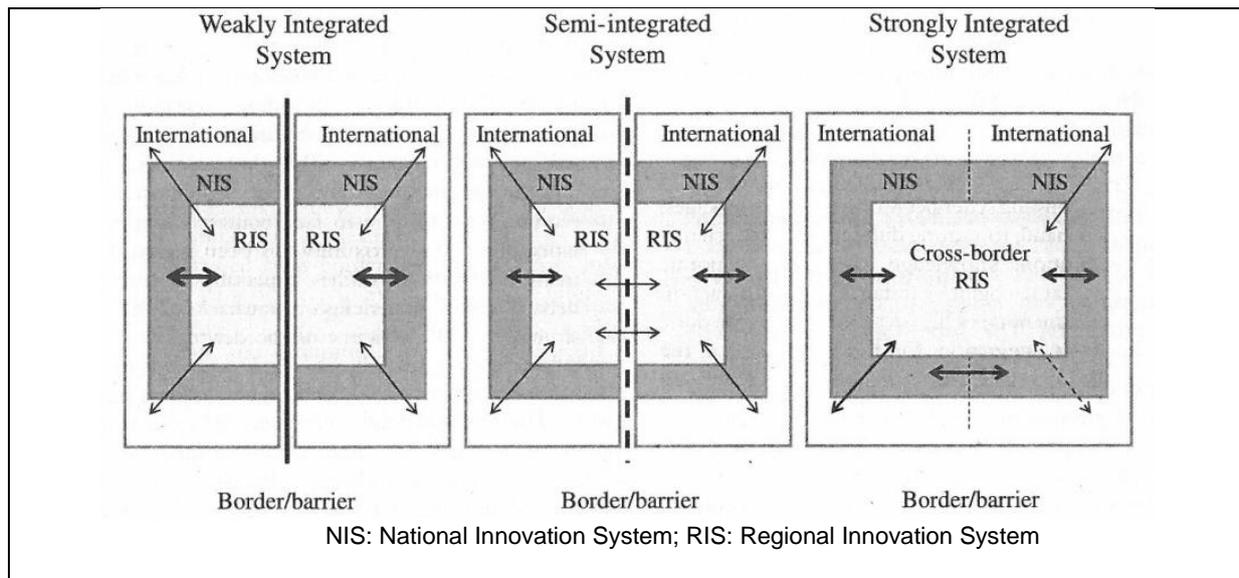
At this stage, the main question can be asked as follows: if convergence between Alsace and Baden-Württemberg seems possible from a theoretical point of view, is it achievable from a political perspective? Section III will attempt to answer this question.

SECTION III: Lessons to be learned for cross-border regional innovation-led policies

The theoretical model proposed by Lundquist and Trippel (2013) deals with the different stages of cross-border integration related to the issue of innovation policies (cf. Figure 2).

In this model, the relationship between the two border territories depends : i) on each of the regional innovation systems involved; ii) on the relations between these regional systems (RIS) and iii) on the relations between the two national systems (NIS) concerned. The analysis by Lundquist and Trippel (2013) pays particular attention to the flow of knowledge and skilled people between the regions concerned. The possible relationships between two regions thus correspond to a wide spectrum from an almost impermeable border to a (more utopian) situation corresponding to a generalized integration.

Figure 2 : The different stages of cross-border innovation-policy integration



Source: Lundquist and Trippel (2013, p. 455)

The previous sections have shown that the cross-border system formed by Alsace and Baden-Württemberg is a case of an intermediate situation between "weakly integrated" and "strongly integrated". In other words, the two regions can be (at best) considered as exhibiting a form of convergence, the latter being reflected in the respective S3 strategies. The cross-border innovation system is proved to be of the "stage two" type.

Going a little further in the analysis, beyond this observation two questions arise: (i) Which policy mechanisms may – at least partly – explain this evolution? (ii) What could be done in the future in terms of governance in order to favour this evolution?

Concerning the first question, one important policy mechanism has been the cross-border project called RMT/TMO (*Région Métropolitaine Trinationale du Rhin supérieur, Trinationale Metropolregion Oberrhein*).³ This bottom-up initiative of the concerned regions (Alsace, a large part of Baden, a small part of Palatinate and North-West Switzerland), agreed by the national states, targeted a strategic convergence of four "pillars": political, economic, scientific and civil society. The self-organized activities of the scientific pillar revealed to be particularly efficient. A very original initiative has been the organization of a cross-border call for research proposals co-financed by regional money and Interreg EU funds. This smaller sized local "Framework Programme" was very successful among research labs of the Upper-Rhine area - and the selection was particularly hard to make among a lot of excellent proposals. Another cooperation instrument designed by the RMT/TMO academic community is an annual cross-border meeting called "Dialog Science". It is nevertheless important to stress the fact that such a set of initiatives is no coincidence in the Upper-Rhine area which has a long tradition of institutional creativity: cross-border international agreements like *Oberrheinkonferenz*, *Oberrheinrat*, *Eurodistricts* and, specifically for the academic world, the EUCOR fed-

³ Cf. <http://www.rmtmo.eu/>.

eration of 5 universities founded in 1989 - which now claims to be "the" university of the Upper-Rhine and is *de facto* the core of the RMT/TMO scientific pillar. The cross-border cluster *Biovalley* involving local companies as well as academic labs. In such a context, there are clear indications that the S3 strategy of each part of RMT/TMO (particularly Alsace) just reflects what has been set up for decades by political will and bottom-up initiatives - and already often supported by the European structural funds. The role played by the EU policy through its new S3 concept was, in this case, just to accelerate an existing systemic convergence. Is it old wine in new bottles?

The second question is about the ways used to foster closer cross-border ties, for the future, in terms of innovation policy. This issue is clearly linked with intra-regional coordination (Baier et al. 2013) and multi-level governance as defined by Crespyet al. (2007). In the case of Alsace, for instance, the specific process of systemic integration across the Rhine is strongly linked to the degrees of freedom of the regional government and its perimeter. The present institutional evolution of French regions will certainly impact the evolution of the cross-border system: the French regions will have more competencies, but they must share the new powers with urban agglomerations: Strasbourg in this case will play an increasing role as well - and therefore the Euro-district Strasbourg-Ortenau which is a cross-border institution at local scale. Furthermore, the new perimeter of the region will include Lorraine and Champagne-Ardennes, involving another cross-border system!

CONCLUSION

In order to conclude, it seems important to list some typical shortcomings of regional STI policies. S3 is nothing really new but looks like a possible vehicle to coordinate innovation policies more strongly. The example of the Upper-Rhine Valley proves that the EU regional specialisation strategy may also have an impact in a cross-border context. Here shortcomings can be considered as missed opportunities for cross-border innovation initiatives and policies. The Upper-Rhine cooperation initiatives paved the way to a better international integration within Europe and the S3 strategy helped to go a little further in the analysis of the future of this common research and innovation area across the river.

By studying this cross-border system, some general conclusions can be derived from the analysis performed. The role of proximity can certainly be underlined: not only in terms of geographical proximity, but also in cultural attitudes, local identities, etc. Such characteristics can be shared even by people speaking different official languages and used to living within different legal/institutional settings. The importance of existing traditions of coordination policies must be stressed. And this point is partly related to the preceding one. Further research is still to be done on the precise policies or various bottom-up initiatives that can lead to more integration than fragmentation. By accumulating case studies on such topics, researchers in innovation economics should develop helpful typologies and, if possible, indicators, in order to influence policy-makers' visions at all levels of governance.

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