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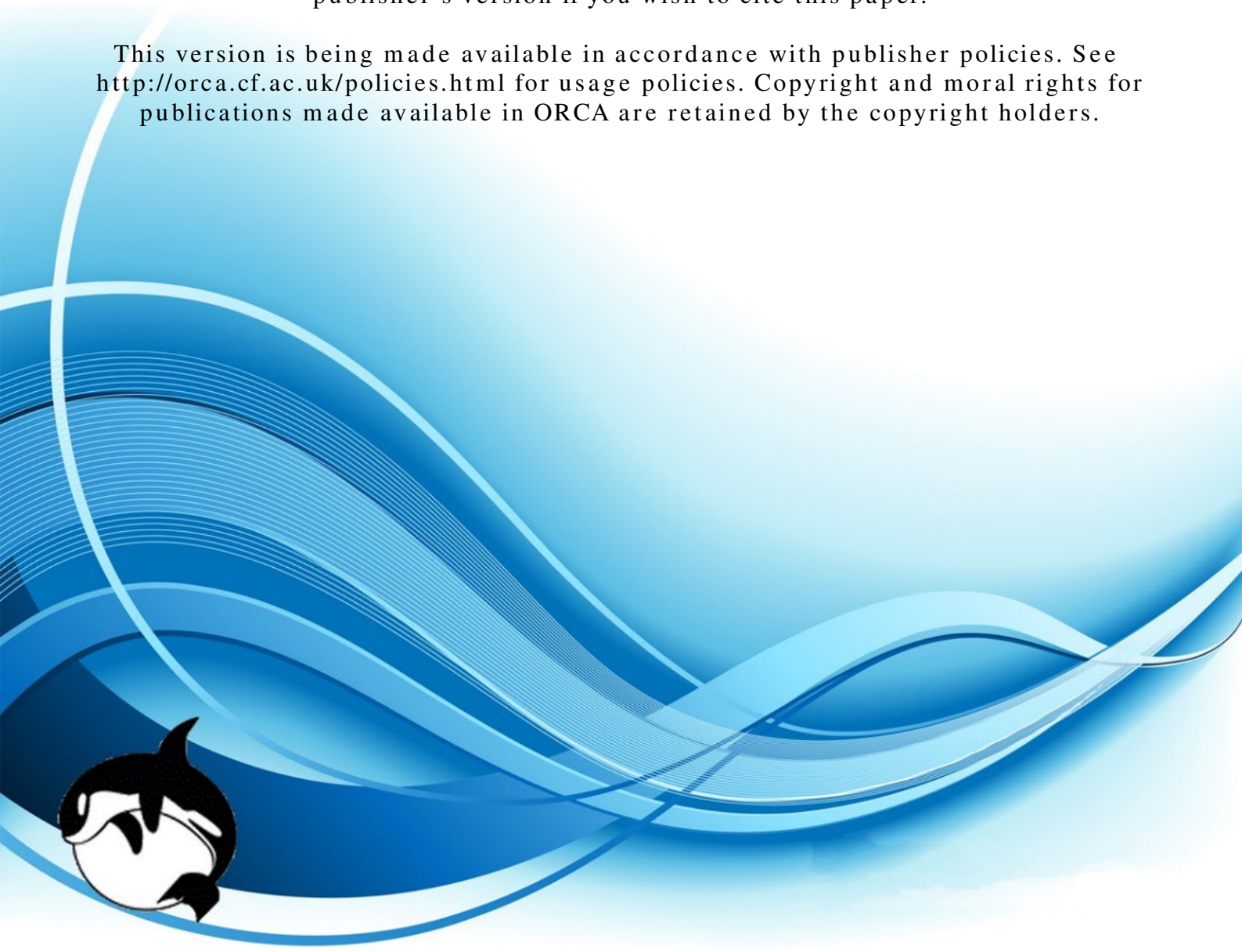

The Institutional Challenges of Dynamic Regional Innovation Strategies

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Abstract

Smart specialization strategies (S3) are widely used to guide place-based innovation policy. However, there is little analysis of the institutional frameworks necessary for implementing multi-actor entrepreneurial discovery processes. This paper explores the evolution of institutions in the Basque Country region over a four-year period. It conceptualizes two levels of institutions: the overall architecture established to pursue an S3; and the micro-processes that emerge to particularise and valorise priorities. The paper highlights lessons relating to the experimentalism of S3, monitoring and evaluation, the engagement of SMEs and civil society actors, and mechanisms for amplifying the voice of regions.

Keywords

Place-based innovation policy; smart specialization strategies; institutions; entrepreneurial discovery

1. Introduction

Regional smart specialization strategies (S3) are the latest expression of the policy debate on context-specific innovation policies, and their adoption is unique in scale. However, while S3 are being widely adopted there are significant questions around their implementation that are likely to have wide-reaching implications for regional innovation success. Specifically, there remains a knowledge gap around the institutional frameworks to support the multi-actor entrepreneurial discovery processes (EDPs) that underscore smart specialization (Benner, 2020; Capello and Kroll, 2016; Foray, 2019, 2020; Hassink and Gong, 2019).

The range of recent studies examining cases of S3 practice present a heterogeneous picture of the institutions and mechanisms supporting EDPs (Aranguren et al, 2019a; Benner, 2019; Cyijanovic *et* al, 2020; Ghinoi *et al.,* 2020; Laranja *et al.*, 2020; Perianez Forte and Wilson, 2021; Roman *et* al, 2018; Trippl *et al.*, 2019). Yet there are few – if any – studies that have taken a longitudinal approach that analyses the evolution of institutions and mechanisms over time in a specific region. This paper sets out to do that in the case of the Basque Country, a region whose S3 implementation has constituted the most recent step in a long-term economic development strategy spanning several decades (Aranguren *et al.,* 2021; Morgan, 2016; OECD, 2011; Porter *et al.*, 2013). The analysis draws on data collected at two moments in time: in 2016, to capture the early phase of S3 implementation, and in 2019 to capture the consolidatory phase. It combines analysis of key documentary evidence with over 50 interviews conducted with key S3 players.

Informed by the case analysis the paper proposes a conceptualization of different levels of entrepreneurial discovery. A first level refers to the overall architecture and rules of the game established to pursue S3 priorities. A second level refers to the more specific and granular processes underway to particularise and valorise priorities, involving more and different actors. This second level is necessary to keep the strategy alive and requires new forms of distributed leadership. It also feeds back into the first level, provoking changes in the rules of the game. By reflecting on the emergence of these institutional dynamics in the Basque case, and while recognising the inherent tension between the particular and the general in such context-specific analyses (Cox and Evenhuis, 2020; Gong and Hassink, 2020), the paper seeks to draw some lessons for other regions that are also facing the institutional challenges of maintaining dynamism in their innovation strategies.

Section 2 provides a critical discussion of the theory, policy, and practice of place-based innovation policy. In doing so it highlights the lack of analysis of the institutional mechanics of regional EDPs with enough granularity and over time. This leads to the research question: how do institutional frameworks to effectively support the micro-dynamics of regional entrepreneurial discovery emerge and consolidate? Section 3 details the case and methodology used to explore this question. The findings are presented in Section 4, including a distinction between two levels of entrepreneurial discovery. Finally, Section 5 discusses potential implications for the implementation of S3 in other regions.

2. Place-based Innovation Policy in Theory and Practice

Place-based innovation policy is a context-specific approach that is most closely associated with its original EU context and roots in the regional innovation system (RIS) literature. The RIS perspective is predicated on two inter-related theoretical claims: that innovation is a place-dependent as well as a path-dependent process (Brazcyk et al, 1998; Asheim and Gertler, 2005; Cooke and Morgan, 1998). According to RIS scholars, the most innovative regions are those in which the key institutions – firms, their supply chains, governments, universities, and the like – are able and willing to work to find joint solutions to common problems. In this respect the RIS perspective has affinities with other territorial innovation models, such as industrial districts, innovative milieu, clusters and learning regions (Asheim, 1996; Moulaert and Sekia, 2003). One of the key achievements of the RIS approach has been to demonstrate that the context-specific character of innovation requires a policy response that is finely attuned to the conditions in each specific region rather than derived from a "best practice" policy template. To address the diversity of these place-based challenges, the most important policy priority is to abandon a "one-size-fits-all" mindset and embrace a more granular approach that respects the specificity of places (Todtling and Trippl, 2005; Coenen et al, 2016). In other words, the principles underlying the S3 process may be general, but the ways in which they are addressed and implemented will reflect the particular conditions – socio-economic and political conditions especially – of the territorial context (Cox and Evenhuis, 2020; Gong and Hassink, 2020).

As well as emphasizing the significance of place, context-specificity also underlines the significance of institutions, which in effect establish "rules of the game" (North, 2005; Gertler 2010). Broadly defined, institutions have come to be understood in a double sense: as *formal* regulations, legislation and economic systems as well as *informal* societal norms that regulate the behaviour of economic actors. According to one seminal account: "They govern the workings

of labour markets, education and training systems, industrial relations regimes, corporate governance, capital markets, the strength and nature of domestic competition, and associative behaviour" (Gertler, 2010:8).

These theoretical insights into the place-based nature of innovation and the significance of institutions help us to understand the uneven development of regions, which are not equally endowed with high calibre institutions or informal conventions that foster inter-organisational collaboration. Such uneven development is amply demonstrated in the implementation of the smart specialisation (S3) programme, which has posed a major challenge for the regional and national governments charged with implementing it.

EU regional innovation policy originated in the STRIDE programme launched in 1990 and so marked its 30th anniversary in 2020. Throughout this period the key actors have been regional governments. Arguably the greatest novelty of S3 is that they involve a more elaborate cast of actors –firms, cluster organisations, universities, technology centres and even civil society organisations– all of whom are seen as legitimate actors in a regional EDP (European Commission, 2012; Foray, 2015). Although these actors are deemed to have parity of esteem in the S3 process, on the grounds that innovative ideas can come from anywhere in economy and society, experience to date has revealed more continuity with the past as regards the principal actors than the policy architects anticipated (Kroll, 2017; European Commission, 2017).

According to the chief architect of S3, the "main goal of a smart specialisation policy is to concentrate resources on the development of those activities that are likely to effectively transform the existing economic structures through R&D and innovation" (Foray, 2015: 3). The main actors in the traditional STI model of innovation have been government, universities and business, the three members of the celebrated Triple Helix (Etzkowitz et al, 2007). However, one of the most pervasive myths in the regional innovation policy community is that a Triple Helix coalition is either already in place or can be readily assembled for the purpose of promoting innovation. On the contrary, the task of integrating the key actors of a region –traditional actors as well as newcomers– is highly challenging. It typically falls to governments to take on this role, and yet the required curating skills are radically different from the command-and-control repertoires with which governments are more familiar. Making this transition from controller to curator to bring together this emerging cast of actors into effective and inclusive governance structures has been one of the biggest challenges in S3 implementation (Gianelle et al, 2016).

The scale of this challenge is reflected in the unevenness in practical responses to the S3 experiment in terms of governance and implementation of an EDP. For example, Trippl et al. (2019: 11) distinguish between advanced (AR), intermediate (IR) and less developed regions (LDR) in their analysis of 15 cases and find that "in LDRs we see the most positive impact of the introduction of S3 on stakeholder involvement, with some changes to past practices also evident in IRs. In contrast, the gains in ARs appear to be more incremental, rarely extending beyond those parties traditionally involved in innovation strategy making". Other multi-regional studies focused on Portugal (Laranja et al, 2020) and Central and Eastern Europe (Cyijanovic et al, 2020) detect significant difficulties with maintaining meaningful stakeholder engagement in the EDP during S3 implementation, an issue also reflected in Pellegrin and Catalano's (2020) observations that EU support was concentrated almost exclusively in the design phase. Indeed, there are a range of common implementation issues that have been left unaddressed and continue to be subject to significant debate (Benner, 2020; Foray, 2019, 2020; Marques and Morgan, 2018; Hassink and Gong, 2019).

In this regard, a range of key policy challenges can be highlighted that are likely to shape the future of the S3 programme in the 2021-2027 programming period based on the European Commission's analysis of S3 progress to date (European Commission, 2017). Firstly, there is a need to reform research and innovation systems to address the two most egregious aspects of system failure: (a) building stronger synergies between the institutions that generate knowledge (such as universities) and those that utilise and valorise knowledge (such as firms); and (b) a stronger focus on targeted skills development, both through higher education and through vocational education and training. Secondly, inter-regional cooperation needs addressing. Indeed, promoting innovation through cross-border value chains has been one of the least successful aspects of the S3 exercise. Although initiatives such as Vanguard[1] or Thematic Platforms[2] have sought to redress this weakness, they have struggled to make headway given both political barriers (local politicians do not favour out-of-area investments) and knowledge barriers (like not knowing who are the best partners).

A third key policy area concerns the need to harness the synergies between different EU policies and instruments. The lack of workable synergies between EU funds for research and innovation has been acknowledged at the highest political levels and there were attempts to secure greater

[1] See: https://www.s3vanguardinitiative.eu/.
[2] See: https://s3platform.jrc.ec.europa.eu/thematic-platforms.

policy synergies between Horizon 2020 (H2020) and the European Structural and Investment Funds (ESIF) during the 2014-2020 programming period, having issued detailed guidance to policy-makers and implementing bodies (European Commission, 2014). Yet barriers remain significant because the two programmes are so radically different: H2020 operates under central management by the Commission while ESIF operates under shared management between Member States and the Commission; while H2020 funds are allocated on the principle of "excellence", ESIF funds for less developed regions are allocated on the basis of "need"; and the two programmes operate with very different spatial coverage, since H2020 funds trans-national projects while ESIF funds national and regional projects. In short, the Framework and Cohesion programmes operate with different principles and procedures and very often with different partnerships.

A fourth implementation issue concerns monitoring & evaluation (M&E) systems. One of the enduring problems of regional innovation policy is the low political commitment to M&E mechanisms. Indeed, the 2017 Fraunhofer S3 survey found that while two-thirds of respondents claimed that their region had some monitoring concept, only half of those had the capacity to track S3 priorities in an informed way, and "a mere 43% of all respondents confirm that a monitoring report has been submitted to relevant authorities" (Kroll, 2017: 12). If S3 is to be more transformational it needs to generate faster feedback as to what works, where, and why. Yet regional practitioners tend to see M&E as an externally imposed audit function, missing its real significance as a learning tool that must be integrated into the governance of S3 policy mixes (Magro and Wilson, 2019). Indeed, according Sabel (2016), the S3 programme needs more diagnostic monitoring, which involves "monitoring to underscore the continuing need at all levels to check on progress, given the limits of planning, and diagnostic because the aim is to facilitate and organize problem solving by the actors, not to use the threat of punishment for bad performance as an incentive for good behaviour". In the absence of diagnostic monitoring, he warns S3 "could become a new name for business as usual".

A fifth key issue concerns the need for more experimentalist polities built around more collaborative and distributed forms of place-based leadership that flexibly bring together a wide range of actors. This is a protean process that is dynamic and subject to a good deal of pivoting, as illustrated by Trippl *et al.*'s (2019) 15-region study. It is also an inherently *political* process, generating winners and losers (Foray, 2019), and one that should be as transparent as possible because "the choice of priorities and then the selection of projects can be subjected to policy capture and in that case there is a risk of public funds being monopolized by a small number of

regulars (i,e., vested interests)" (Foray, 2019: 9). Distilling this granular experience into a more generic principle we might say that a S3 governance system needs to be kept as "alive" and "transparent" as possible, and this requires the regional government to play the role of a sensitive curator rather than a regimented taskmaster. This is perhaps the biggest challenge for the S3 programme because it involves a radical shift in the political culture of public administrations, from hierarchical and self-referential bureaucracies to more porous and experimentalist polities (Morgan and Sabel, 2019).

3. Research Question, Case and Methodological Approach

The need to reform R&I systems, foster inter-regional collaboration, harness synergies between different EU instruments, develop robust and responsive M&E systems and transition towards an experimentalist polity all point to gaps in our current understanding of the institutional arrangements for putting S3 into practice. Indeed, these key policy issues are inherently inter-related because underlying them all are the institutional challenges posed by the multi-actor nature of entrepreneurial discovery, and the related need to link emergent EDP strategies across multiple administrative levels. A specific research question that appears critical for the successful practice of context-specific innovation policies, therefore, can be framed in terms of *how do institutional frameworks to effectively support the micro-dynamics of regional entrepreneurial discovery emerge and consolidate*? While unsurprising given the relative novelty of S3, there is scant research that analyses the institutional mechanics of regional EDPs with sufficient granularity and over time.

We approach this research question through a longitudinal case study focused on one region's attempts to operationalize the smart specialization concept. Single case studies are particularly useful when there is a need to capture in depth the complexity of the object of study, to generate concrete, practical knowledge that is context dependent (Flyvbjerg, 2006; Stake, 1995). This is precisely where state of the art on S3 finds itself at this juncture. The context dependence of innovation policies in general is widely recognized, as is the specific complexity of implementing regional S3 with/from EDPs that involve a wide and heterogeneous cast of actors. Thus detailed, dynamic knowledge is needed around how these strategies are being implemented in different contexts, and which types of institutional frameworks work at different phases of their implementation. While drawing general lessons from such context-specific case analysis from a position of "ontological boldness" and "epistemological modesty" is always difficult (Cox and

Evenhuis, 2020: 432-3), theory development in economic geography requires the continuous confrontation of general arguments with new particularities (Gong and Hassink, 2020).

Basque Country S3

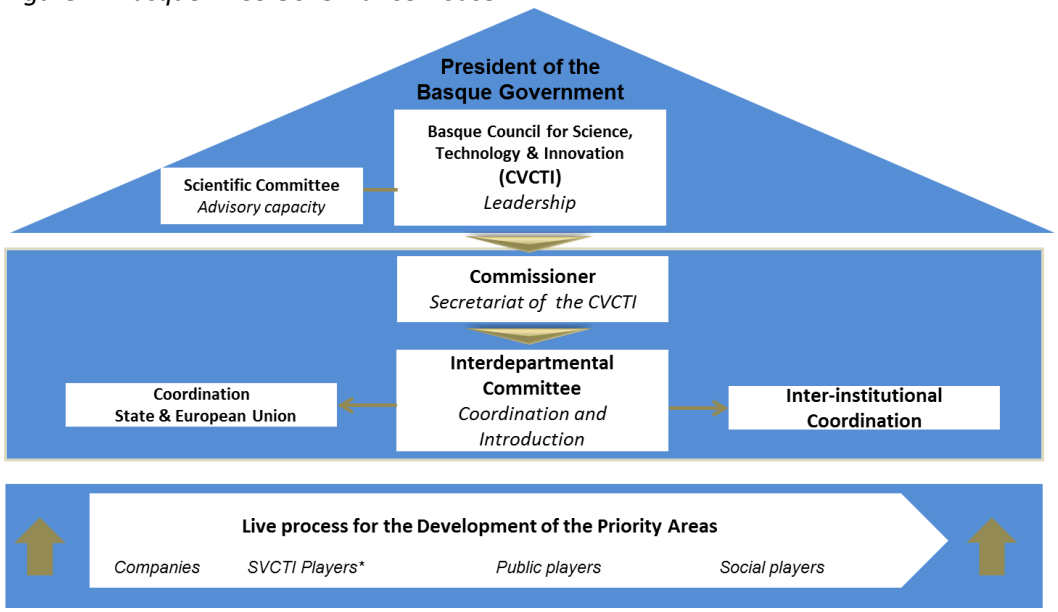
We analyse the implementation of the Basque Country's S3 over the period 2014-2019. The Basque Country region in the north of Spain is a widely recognised case in industrial and innovation policy (Aranguren *et al.*, 2021; Morgan, 2016; OECD, 2011; Porter *et al.*, 2013). Its capacity to develop a long-term strategy over the course of the last four decades has been facilitated by a national political administrative system that affords significant autonomy to the Spanish autonomous communities, and to the Basque Country in particular, where it extends to tax collection powers. Indeed, when it comes to autonomy to design and implement a regional S3 strategy, the Basque Country is near the top of the spectrum of European regions. Moreover, a strong degree of political stability within the Basque Country itself has eased the pursuit of a long-term industrial strategy.[3] In this regard, it is a good case through which to study the implementation of S3 because of its consistent policy trajectory over a sustained period. Institutional frameworks for supporting the innovation system and promoting industrial development are well established through over 30 years of public-private interaction geared at fostering regional competitiveness (Valdaliso *et al.*, 2014). The real novelty of smart specialization –the multi-agent entrepreneurial processes for discovering promising activities to prioritize, thus guiding innovation policy decisions– can therefore be distinguished from pre-existing institutional context in a way that highlights potential lessons with relevance elsewhere.

While the Basque S3 is embodied in the 2020 Science Technology and Innovation Plan (PCTI 2020) (Basque Government, 2014), it is a continuation of previous plans. Indeed, there are two novel centrepieces of the PCTI 2020. The first is the identification of three strategic priority areas (biosciences-health, energy, advanced manufacturing), alongside four opportunity niches linked mainly to urban and rural development agendas (food, creative and cultural industries, urban habitat, environmental ecosystems). The second is a new governance framework (see Figure 1). The overall leadership of the S3 rests with the Basque Science, Technology and Innovation Council (CVCTI) and ultimately with the President of the Basque Country. They are advised by a Scientific Committee, members of which are appointed in a personal capacity and come from a

[3] The centre-right Basque Nationalist Party has been in Government (either in majority or in coalition) for 40 years.

wide range of backgrounds and disciplines from home and abroad. The actual coordination and implementation of the S3 rests with relevant government departments through an interdepartmental committee.[4] This is also a focal point for inter-institutional coordination within the Basque Country and beyond the Basque Country with the Spanish government and the European Commission. The work of the interdepartmental committee, and the link to the top tiers of governance, is supported by a Science, Technology and Innovation Commissioner working with a Technical Secretariat. Finally, the governance foundations are provided by live processes (steering groups) for the development of the priority areas, which involve actors from the quadruple helix of business, research, government and civil society.

Figure 1: Basque 'RIS3 Governance House'



Source: Adapted from PCTI 2020 (Basque Government, 2014)

The evolution of the strategy can be broken down into three phases. A *design phase* (2014) involved background analysis, consultation, identification of priorities and the design of a new governance framework, culminating in the publication of the PCTI 2020. An *early implementation phase* (2015-2016) corresponded with establishing the new governance mechanisms, most notably the steering groups. An *implementation consolidation phase* (2016

[4] This meets three times a year to oversee progress with the S3 and coordinate government actions. It is led by the Presidency Department and includes the Departments for Competitiveness and Economic Development, Health, Education, Language and Culture, Environment and Territorial Policy, Employment and Social Policy, Public Administration and Justice, and Treasury and Finance.

onwards) has seen the evolution of the steering groups, the refinement of priorities and the development of an M&E framework.

Methodological Approach

In line with our aim to explore the institutional changes that have occurred in the Basque Country due to taking an explicit S3 approach, our analysis is based on two types of data. First, we have undertaken semi-structured in-depth interviews (of between 1 and 2 hours in duration) with over 50 key actors in the Basque S3 process. Secondly, we have collected and analysed a wide range of documentation used by different stakeholders in the S3 design and implementation phases, including the documentation prepared for the interdepartmental committee meetings. Both types of data have been collected at two discrete moments in time: firstly in 2016, corresponding broadly with the end of the early implementation phase; and then in 2019 to capture the evolution of the implementation.

The primary data collection in 2016 was designed following: (i) analysis of the S3 as set out in the 2020 STIP; (ii) analysis of internal government documentation used to guide the S3 process both in the design phase and during the early implementation period; and (iii) an initial scoping interview with key figures from the Presidency Department of the Basque Government. This led to the identification of 35 actors to interview, who were spread across the triple helix and across the priority thematic areas of the S3. A semi-structured interview guide focused questions to interviewees on four areas: (1) their role in the design of the initial S3 plan (PCTI 2020); (2) what had happened since the plan was approved in terms of governance and shared vision, including detail on the formation of steering groups and changes in funding programmes; (3) what had happened within the steering groups in terms of the process of stimulating entrepreneurial discovery; and (4) what had happened in the other transversal action areas highlighted in the PCTI 2020 (e.g. reordering of the STI network, evaluation of the STI system).[5]

The second primary data collection in 2019 was informed following a similar process of documentary analysis and scoping interview. This led to the identification of 28 actors to interview, around half of whom were the same as those interviewed in the previous phase. The second semi-structured interview asked interviewees about the evolution of the S3 process during 2017 and 2018 (since the previous data collection point). It focused questions on three

[5] For further detail, see: Aranguren *et al.* (2016).

areas: (1) the main changes in the functioning of the steering groups and related institutional mechanisms (actors involved, organisation, strategy framework, links to EU initiatives); (2) the emergence of projects, including their fit within the priority areas, leadership and characteristics (e.g. closeness to market, technological vs non-technological innovation components); and (3) mechanisms to monitor and/or evaluate the impacts of the activities being undertaken.[6]

All interviews were conducted by at least 2 of the research team, one of whom played the primary role of interviewer while the other played the primary role of note-taker. The interviews were not recorded as it was judged that this may inhibit the ability of interviewees to talk more openly and critically around issues that can be politically sensitive. The detailed notes from each interview were shared among the research team and key information was translated into a matrix of thematic areas and horizontal, cross-cutting themes to enable the identification of patterns in the data.

4. Case Analysis: Two Levels of Entrepreneurial Discovery

Early Implementation (2014-2016)

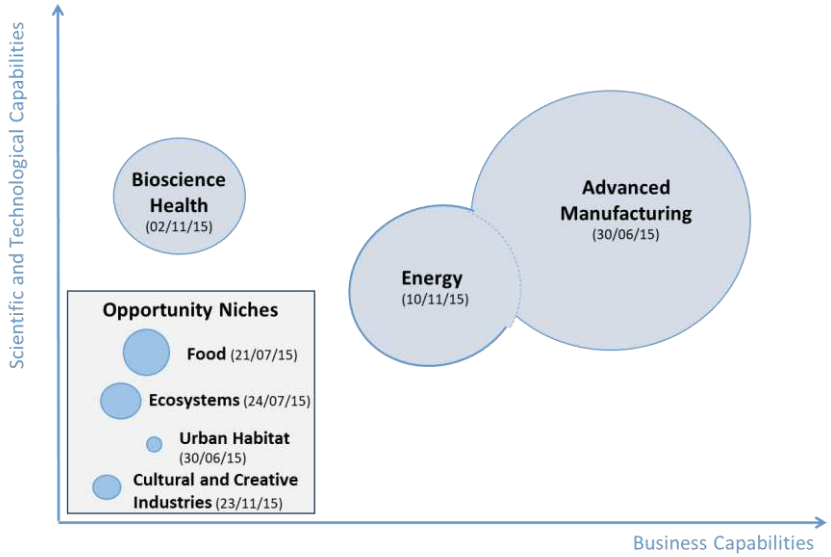
Analysis of data from the first stage of collection in 2016 underline three key features of an emerging institutional framework designed to support the S3. Firstly, the attempt to structure a 'bottom-up' EDP with sustained involvement of a much broader range of actors than in the past. Secondly, the introduction of a range of mechanisms oriented to bridging different parts of government and connecting them with this EDP. Thirdly, initiatives to build-in a greater degree of openness to critical voices.

The clearest and most wide-reaching novelty was the organisation of a dynamic process for the development of the priority areas. This blueprint for an EDP was based on steering groups for each of the strategy's seven thematic areas (3 strategic priorities and 4 opportunity niches) (see Figure 2). The impetus for these steering groups came from government, which set initial 'rules of the game': (i) they should involve representatives from the public administration, companies, cluster organisations and scientific/technological agents; (ii) they should have a board and technical secretariat, under which specific thematic working groups may be established; (iii) they should report to the inter-departmental committee; (iv) they should initially work on the

[6] For further detail, see: Aranguren *et al.* (2019b).

identification of the most significant projects in their areas and should explore synergies in the intersection with other thematic priorities.

Figure 2: Priority Areas / Steering Groups (with dates of constitution)



Source: Adapted from PCTI 2020 (Basque Government, 2014); bubbles reflect relative size of priority areas in the Basque Country.

While all seven groups were formally constituted during 2015, their pace of development, governance, participation and operation were quite different, reflecting the reality of collaboration already existing in each area. Thus, a key feature of this new institutional mechanism was considerable flexibility within overall 'rules of the game'. As noted by an interviewee from the regional government: "The steering groups are the true motors (of the S3), those that really know. They include the public administration, the firms (who sometimes chair the groups), the universities and the technology centres. It is the actors themselves that decide on the working groups that they should organise to develop the strategy of each priority area, and even the transversal initiatives. For example, the advanced manufacturing steering group has created a working group on training and a Basque digital innovation hub".

The gradual emergence of more distributed S3 leadership was observed across all steering groups, with a range of different actors taking leadership initiative (for example, in chairing the steering groups and in the establishment of specific working groups). From strong initial government involvement, there was a progressive spreading out of leadership to involve actors from business (largely represented by cluster organisations) and research, with a great deal of time and energy being invested by a lot of people. Significantly, however, the fourth element of

the quadruple helix – civil society – remained largely outside (bar a few exceptions in the biosciences-health priority and urban habitat opportunity niche), in line with the European Commission's (2012) initial fears.

Alongside broadening the range of actors involved through the steering groups, the PCTI 2020 initiated several institutional changes within the public sector architecture surrounding innovation policy. Most notable in the context of the well-acknowledged challenges of avoiding silos within government was the creation of an inter-departmental committee, into which each of the steering groups reported the evolution of their activities. This was an attempt to work across departments in coordinating the overall strategy, which interviews suggested was proving partially successful in improving coordination. Examples to evidence success included cooperation between the Competitiveness and Economic Development Department and the Education, Language and Culture Department around industrial doctorates, and between the Competitiveness and Economic Development Department and the Health Department on the interface between food and disease. Yet while stimulating new conversations across government at the operational and political levels, it was also acknowledged that these were not yet stimulating coordinated changes to existing policies (e.g. cluster policy, technology policy, innovation policy, education policy) in support of the overall strategy. Moreover, mechanisms established to address multi-level governance issues remained under-developed, with little evidence of strategy or policy coordination between the regional, provincial and city levels.

The third key change to the institutional architecture was the integration of different voices through the creation of an advisory group that explicitly sought to incorporate fresh perspectives. The interviews suggested that this was agile and effective in injecting external advice into day-to-day decisions. The members of this group expressed surprise and enthusiasm at being able to share their ideas directly with the President and Council of Ministers: "it is very interesting, and you feel that you can move … they are open to listen to critical voices". The interviews also highlighted several concrete examples of changes stimulated by the advisory group, including mechanisms to bridge the gap between industry and workers/researchers within the health system, a stronger emphasis on the interface between the different thematic priorities, and changes to the management of R&D subsidy programmes to ease private-sector decisions on co-investments.

Implementation Evolution (2016-2019)

Analysis of data from the second collection phase in 2019 uncovered a series of changes related to the institutional mechanisms established in the first period. Firstly, there were significant revisions to the overall organisation and structure of the EDP within the steering groups. Changes in the governance of the groups reflected an approach rooted in experimentation, testing what works and adapting. For example, it was noted in the energy steering group that alongside government, economic development agencies and technology centres, initially "the representation of firms was only from the cluster organisation". However, in this period "it was decided that some companies should join the steering committee, especially lead firms. We chose four lead companies for the most important leading work – grids, solar technology, wind power and oil and gas – and a fifth company corresponding with the presidency of the cluster organisation. It has been positive as now there is a second wave of companies asking to be there … and it is easier to translate the decisions of the committee to the working groups."

This could be interpreted as evidence of greater comfort with the experimentalist polity and consolidation of a shift towards a dynamic strategy. Moreover, while government continued to play a strong leadership role in some of the steering groups (particularly the less developed 'opportunity niches'), there was evidence of a progressive ceding of power to others, signalling further steps towards the emerging distributed leadership identified in the earlier period. Indeed, while there remains road ahead for a truly radical shift in the political culture from hierarchical bureaucracy to more porous and experimentalist polities, the fluidity of the process and changing leaderships signal that the required institutional mechanisms are starting to consolidate.

Changes were also observed in the involvement of different groups of actors in the EDP. The stand-out trend was greater involvement of (generally larger) companies through their participation in working groups and projects. This sat alongside an increase in awareness of the importance – though difficulty – of integrating SMEs into the processes, including the activation of capillarity through a link with local economic development agencies. A shift could also be observed in the proactivity of the universities, which were now engaging more directly in the steering groups, starting to participate in specific projects, and making moves to align their own strategies to the S3 through new governance mechanisms within the university system. For example, in the context of the work of the advanced manufacturing steering group, a new engineering, science and technology 'cluster' was formed (4gune)[7] that brings together key

[7] See: https://euskampus.eus/en/programmes-en/a-medida-en/4gune?set_language=en

faculties working on Industry 4.0 across all Basque universities as a base from which to strengthen university-business interaction. In this regard, one interviewee noted that the role of the universities and technology centres had "evolved from being centred on capacities towards being centres on necessities … facilitated by the feedback of the firms". These changes, and the associated synergies between knowledge institutions and business in innovation projects and skills development, represent a partial response to the need to reform research and innovation systems in the context of S3. In common with other places (Kroll, 2017), however, there was very little progress in integrating civil society actors into S3 processes.

In terms of the content of the strategy, the documentation and interviews evidence a process of coming to terms with a more fluid strategic process, but at different speeds across different steering groups. In the three strategic priority areas the actual focus of the activities had not changed significantly, besides some evidence of greater thematic focusing in energy and bio-health and, in advanced manufacturing, "an evolution of the steering group towards more transversal challenges". This more transversal strategy in manufacturing was focused on three pillars: (i) supporting SMEs through communication, advice and consulting in a 'digital innovation hub'; (ii) developing the necessary skills through fine-tuning training in collaboration with universities and vocational education centres; and (iii) developing the new business models required to effectively monetise emerging technologies.

In the opportunity niches more substantial changes were observed associated with the change from reflection to action. This was leading to more focused activities in most cases as small projects began to be developed. There was also a general movement towards projects with higher technological readiness levels. For example, an interviewee participating in the ecosystems steering group noted that the activities "are evolving towards higher TRLs, but there is not a lot of funding: the most important projects have been developed with Hazitek (an R&D+i support programme managed by the Basque Government) and Europe." Indeed, more generally an increased involvement in European projects was observed in the opportunity niche steering groups in particular.

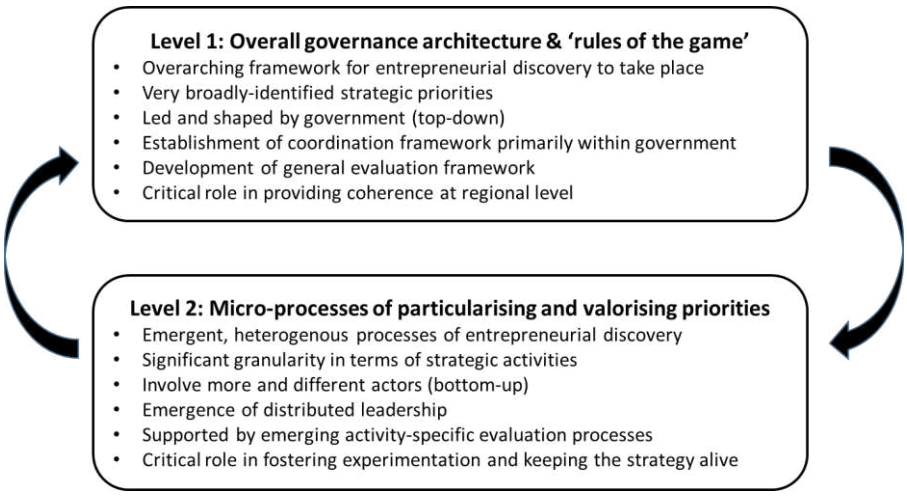
The final set of changes relate to M&E practices. These are an acknowledged missing link in S3 (Kroll, 2017; Sabel, 2016) and have featured in criticism of Basque innovation policy in the past (OECD, 2011; Morgan, 2013). It was significant, therefore, to observe evidence of experimentation with evaluation. On the one hand, the S3 Secretariat had developed an indicator framework for monitoring the overall strategy, with a traffic light system that was

being used to guide reflections on the evolution of the strategy in the Inter-departmental Committee meetings. On the other hand, there was also evidence of more *ad hoc* evaluation processes in most of the Steering Groups, which were influencing ongoing actions around project selection and development on the ground. For example, a set of indicators related to the involvement of firms and the closeness to market of projects had been defined to monitor the evolution of the food steering group, and in the ecosystems priority area it was suggested that "the results of an evaluation survey among the participants has changed the mission of the steering group and the objectives and has added new tasks."

Levels of Entrepreneurial Discovery

The findings across the two implementation phases of the Basque S3 offer insights on the emergence and consolidation of institutional frameworks to support the micro-dynamics of entrepreneurial discovery. They highlight the need to adapt institutional frameworks over time to allow the regional government and other actors to assume different roles depending on the stage of the S3 lifecycle and the issues being addressed. The primary role of government is most pronounced at the beginning of the process as 'rules of the game' are established to create a framework for collective action. Later, when the EDP is underway, other actors begin to assume a more prominent leadership role to define priorities and translate them into concrete projects. The analysis therefore points to two distinct levels of institutional dynamics supporting entrepreneurial discovery (see Figure 3).

Figure 3: Two levels of institutions supporting regional entrepreneurial discovery



On the one hand is an overall governance architecture and 'rules of the game': an initial framework established for entrepreneurial discovery to take place. In the Basque case this process was led and shaped 'top-down' by the regional government. It provided an initial set of broad thematic priorities and a governance framework that identified 'by who' and 'how' the strategy would be taken forward. It also facilitated the development of a general evaluation framework for the strategy. Finally, this overall architecture played a critical role in providing for coherence at a regional level, acknowledging the need to work across silos within government and to engage with other levels of government.

This first level of institutions presented a significant break from the past by explicitly accommodating the need for engaging more and different actors in the strategy process and creating an environment conducive to the emergence of 'bottom-up' entrepreneurial discovery dynamics. It links therefore to a second level of institutions that have emerged within the context of this overall framework. This is characterised by the micro-processes that are nurtured within the overall architecture to particularise and valorise priorities in real time and to generate an experimental polity on the ground. These are emergent, heterogeneous processes of entrepreneurial discovery that require space to take their own paths and to develop much greater granularity in terms of the specific activities developed. They involve more and different actors in distributed leadership roles, are supported by emerging activity-specific evaluation processes, and play a critical role in fostering experimentation and keeping the strategy alive. As they develop, they also have the potential to feed back into and influence the first level of institutions.

5. Discussion and Conclusions

The two levels of entrepreneurial discovery identified through this longitudinal analysis of the Basque Country S3 process offer a novel framework through which to understand the institutional challenges that characterise dynamic regional innovation strategies more generally. Above all, the case highlights the significant institutional innovations that are necessary, at both the macro and micro levels, as linear plans give way to living strategies. Science, technology, and innovation plans have traditionally been enormously complex and time-consuming affairs, taking years to design and typically then providing only a fixed reference point until they were supplanted by a new plan. The rise of experimentalist governance and pragmatic approaches (Sabel and Zeitlin, 2012) is challenging this static planning. Specifically, it requires breaking down

the distinction between policy design and delivery, to facilitate the constant pivoting of priorities and activities as new market and technological logics emerge and interact with one another. The tensions inherent in this quite dramatic change – for example balancing the commercial need for pivoting with the political need for budget-setting – are evident in the Basque case. Yet the two levels of entrepreneurial discovery can be interpreted as a response to these tensions, reconciling government's need for an overarching framework with the emergence of micro-institutional mechanisms that interact with that framework to keep the S3 process alive from below. This second level of entrepreneurial discovery dynamics is built on the involvement of more and different actors, enabling a more distributed, collaborative approach to place leadership.

The extent to which the emergence and consolidation of these institutional arrangements are supporting the transition towards a dynamic strategy in the Basque case is demonstrated by the different evolution of the seven steering groups under common 'rules of the game'. Different speeds and depths of steering group dynamics have been accommodated and fluidity in the configuration of the seven priority areas themselves can also be observed. For example, the dichotomy of 'strategic priorities' and 'opportunity niches' begins to give way to a more nuanced distinction that reflects cross-cutting elements such as circular economy. Also evident is an increasing tendency within the steering groups to address transversal challenges such as internationalisation, skills, new business models and entrepreneurship. It might be argued that addressing such transversal issues generates conditions more favourable to advance the thematic priorities themselves, especially where issues have emerged at the micro level and should therefore be well-tuned to real, current problems. However, another interpretation is that falling back on transversal issues, however well-tuned, represents an escape from the politically difficult selection decisions that must be made for progression towards more granular thematic prioritisation (Foray, 2019). In this sense the Basque experience also reinforces to a certain extent what we know about the wicked problem of prioritisation.

Another age-old wicked problem concerns the practice of facilitating joined-up and adaptive policy. This is a major challenge for governments because many different forces – not least professional disciplines, knowledge communities, budgetary reporting lines and department-based governance systems – conspire to sustain rigid, silo working cultures. In this context designing a policy mix for the inter-dependent and evolving nature of S3 priorities is a major challenge hinged on: (i) the need for inter-departmental and multi-level coordination within government; and (ii) the need to integrate multiple funding streams from the public and private sectors, not least because the former can help to de-risk the investment opportunities for the

latter (Mazzucato, 2012). The new institutional arrangements developed in the Basque Country have taken steps in this direction with the establishment of an inter-departmental coordination framework within government (level 1) and the involvement of more and different actors (level 2). Policy mechanisms have also emerged to link the two levels. For example, a central innovation fund was established during the second period for cross-cutting projects that bridge steering groups (and thus also the different government departments and actors involved).

It is still early to gauge the extent to which these measures are fundamentally changing the way in which policy is designed and implemented across different parts of government and in collaboration with other actors. The test will come soon, with the already emerging need for larger, more integrated and multi-annual projects, and the challenge of managing large injections of funding associated with the NextGenerationEU recovery plan. These require more fundamental changes to implementation that experiment with new instruments and public-private finance modes. The effective use of demand-side instruments such as public procurement is also likely to be increasingly important in driving economic transformation, but there are few regions that have included this in their S3 policy mix (Uyarra, 2019). Finally, there are acknowledged multi-level governance challenges in the nexus between the regional S3 and other processes at the provincial, city and local levels.

The case analysis also has implications for monitoring and evaluation practices in the context of S3 development. While widely (mis)construed as "looking back" exercises, to see what worked, where and why, they are in fact critical for developing forward-looking intelligence that can generate transformative policy-learning and guide territorial strategy processes (Magro and Wilson, 2019; Sabel, 2016). Alongside this strategic intelligence function, when it comes to the mechanics of the EDP a clear and transparent evidence base can help to resolve conflicts around politically sensitive project selection, thus enhancing credibility and commitment of/to this experimental process. As the need for strategic policy intelligence to make prioritisation decisions become more visible during the S3 process, the case has illustrated how this can act as a catalyst for institutional developments. Indeed, there has been a clear deepening of political concern with monitoring and evaluation in the context of the Basque S3. Most interestingly, commitment to develop a general indicator framework at the macro level has been accompanied at the micro level by experimentation with a range of more nuanced evaluation activities within each of the steering groups, under the premise that better evidence of the effects will strengthen the ongoing discovery dynamics.

Another conclusion, mirrored in other studies (e.g. Kroll, 2017; Laranja *et al.,* 2020), is that important actors are still missing from the EDP. The involvement of SMEs remains an issue, despite progress in their integration into the level 2 institutional dynamics and a strong increase in awareness around the barriers involved. This is a challenge across Europe, as reflected in the prominence of SMEs in the new Industrial Strategy for Europe (European Commission, 2020a) and accompanying SME Strategy (European Commission, 2020b). Experimenting with articulating the roles of different types of intermediate agents is a key element highlighted by the Basque experience, in line with other studies (e.g. Koschatsky *et al.,* 2017; Pugh, 2018). Cluster organisations have been active in the steering groups throughout both periods analysed, and in the most recent period local development agencies have also been leveraged to diffuse the steering group activities, and vocational training centres have supported non-R&D technological innovation among some 1600 SMEs.

The integration of social challenges into S3 is a further missing element highlighted, reinforcing concerns expressed at the launch of S3 (European Commission, 2012). The United Nations' Sustainable Development Goals are providing a catalyst for re-thinking how to integrate societal challenges into S3 (Polido *et al.*, 2019), with many recent European projects and events dedicated to this issue. This also crosses over with a renewal of interest in the role that clusters can play beyond seeking narrow economic goals (Alberti and Belfanti, 2019). In the context of increasingly influential approaches based on transformative innovation policy (Schot and Steinmuller, 2018), mission-oriented innovation policy (Mazzucato, 2018) or digital and green industrial transition (European Commission, 2020), and indeed in the context of the socioeconomic impacts of the Covid pandemic, the integration of social challenges into regional strategies seems likely to continue to escalate up the political agenda.

Our last conclusion relates to inter-regional cooperation and synergies between EU policy instruments. While the Basque Country is well-positioned in each of its priority areas within EU projects and platforms, which in many cases provide a catalyst for the development of the EDP, there is a perception that the benefits from being well-positioned in EU initiatives are not very tangible. This relates on the one hand to the extent to which regions can make their voices heard within EU dynamics, when most key decision-making mechanisms are centred on the Member States. It suggests that greater voice could be given to regions around innovation and economic development in line with the weight placed at regional level on the development of S3. On the other hand, it points to the pending issue of coordination across regional initiatives, especially the lack of effective financial instruments to support inter-regional investments in research and

innovation. Thus, while institutional developments within the Basque Country are facilitating in-region connections, there remain barriers to scaling these dynamics upwards and outwards to strengthen cross-border value chains.

Finally, in reflecting on the potential for generalising some of the conclusions discussed above, we should return to the degree of policy autonomy and the political stability that characterises the Basque Country. These are distinctive characteristics of the region and have undoubtedly played conditioning roles in the institutional developments discussed. Both support the capacity for proactive government, and while too much political stability could also risk policy lock-in and hinder experimentation, this is largely mitigated in the Basque case by diversity in the governance system that itself creates tension and rivalry. Moreover, we would argue that while stable, proactive and empowered government is necessary for the first level of the institutional framework, as it is the only actor with real legitimacy to set 'rules of the game', it loses much of its importance at the second level, where universities, cluster organisations, chambers of commerce, etc. can all play key roles alongside firms. This would imply, however, that regions lacking a strong and stable government to provide that macro framework may have a significant handicap for the consolidation of micro-level dynamics, raising the key question of who (and how) else could play that role. It suggests avenues for future research exploring the development of institutional frameworks for dynamic innovation strategies in other regional and institutional contexts. This is important to continue the iterative process suggested by Gong and Hassink (2020) as central to advancing theory around inherently place-specific questions such as the institutional characteristics required for effective, dynamic regional EDPs.

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