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Layers, levels and coordination challenges: comparing S3 governance in Puglia and Extremadura

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Abstract

Research and Innovation Strategies for Smart Specialisation (RI3s) were launched within the EU Cohesion policy for the 2014-2020 period. Smart Specialisation is an experimental policy approach requiring the identification of strategic areas of intervention through both analytical methods and stakeholders participation. Such an approach implies a move from a 'generic' to a 'place-based' regional development policy (McCann & Ortega-Argilés, 2015). Since the introduction of RIS3, governance has been considered an important pillar of the strategy. However, the scientific discussion on governance has largely stemmed from a theoretical perspective, without taking into account the underpinning administrative framework and constraints. This paper fills this gap by comparing the governance structures of two regions from the south of Europe: Extremadura, Spain and Puglia, Italy. Both are classified as less-developed regions, both belong to member states that devolve significant administrative competences to regions and both have suffered significantly from the financial crisis of the last decade. The paper discusses the challenges in the multi-level and multi-layer governance structure, building on the literature on innovation systems and economic geography. The paper argues that unless the debate on RIS3 governance (and on Smart Specialisation in general) is grounded in the reality of public administration rules and practices, it impossible to advance in our understanding.

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1 Introduction

Several studies highlight that the process of globalisation has blurred the power of modern governments and public administrations, making it more important to develop new approaches to governance (i.e. multi-level, multi-layer, multi-actor) to face the complexity and uncertainty of issues in the policy agenda (e.g. Castells, 2008). Governance institutions face several challenges: firstly their efficacy, that is, its adequacy in managing problems, is being questioned (e.g. Soros, 2006); furthermore the increasing distance between citizens and representatives (e.g. Flew et al., 2016) and between the cultural and political identity of citizens (Castells, 2004), puts a strain on their legitimacy; the increasing inequality between countries, between regions and social groups (Piketty, 2015) questions the ability of current governance settings to pursue equity. Within this context, the design and implementation of Smart Specialisation Strategies (RIS3) offer a unique scenario to assess the challenges of a multi-level, multi-layer, multi-actor and dynamic approach to governance in Europe (Scott and Trubek, 2002).

Smart Specialisation Strategies were launched within the Cohesion policy of the European Commission for the 2014-2020 programming period. Smart Specialisation is an experimental policy approach characterised by the identification of strategic areas for intervention based both on the analysis of the strengths and potential of the economy and on an Entrepreneurial Discovery Process (EDP) with wide stakeholder involvement (Foray and Goenaga, 2013; Marinelli and Periañez Forte, 2017; Marinelli et al., 2016). The concept of 'smart specialisation' first appeared in the sectoral growth literature (Foray et al., 2009; Foray et al., 2011) and was then applied to regional policy (McCann and Ortega-Argilés, 2015; Cooke, 2016). The application of the 'smart specialisation' concept at regional level implies a move from a 'generic' to a 'place-based' approach in regional development (Rodríguez-Posé et al., 2014; McCann and Ortega-Argilés, 2015).

RIS3 governance - intended as the set of structures, functions, processes, and organisational traditions that represent the framework of policy accountability (World Bank, 2007) - has always been considered a pillar of the strategy. However, despite a conspicuous conceptual debate on RIS3 governance, limited empirical evidence aimed at understanding the policy space in which RIS3s are implemented has so far been collected. In particular, the scientific discussion on RIS3 governance has largely stemmed from a theoretical perspective, without taking into account the administrative framework and constraints within which RIS3 is implemented as part of Cohesion policy.

This report aims to fill this gap, whilst being grounded in the academic literature. Indeed, it compares the governance structures of two regions from the south of Europe: Extremadura, Spain and Puglia, Italy. Both are classified as less-developed, both belong to member states that devolve significant administrative competences to regions and both have suffered significantly from the financial crisis of the last decade. These elements make the comparison meaningful and relevant. The paper identifies and explores common governance/coordination challenges, framing them within the specific administrative and economic context of each region. In so doing, it highlights how - unless the debate on governance (and on Smart Specialisation in general) is grounded in the reality of public administration rules and practices, it is impossible to advance in our understanding.

The paper is organised as follows: section 2 describes the current policy and scientific debate on the governance of regional innovation and RIS3 in particular, allowing a more precise definition of the main focus of our research. Section 3 describes the objectives and methodology of the paper; section 4 provides a techno-economic account of the two regions, with details on their RIS3 and cohesion policy investment; section 5, the core of the paper, compares their governance structure; section 6 concludes.

2 The governance of Smart Specialisation: some conceptual considerations

This section brings together the insights from two streams of literature on innovation that are relevant for RIS3: (i) the geography of innovation literature and (ii) the innovation-policy literature. From the first stream of literature, we derive a justification as to why our research is relevant. From the second, we derive some input to develop our analytical framework.

2.1 Why should we look at governance in S3?

Rodríguez-Posé et al. (2014) find that quality of government institutions, in addition to socioeconomic conditions, have a key role in explaining the innovative performance at the regional level. Peripheral regions show marginal positive effects of R&D private investment in innovation and might improve their innovation capacity from institutional reforms. In other words, the quality of government is a prerequisite for the success of RIS3 strategies. The importance of the quality of government institutions in regional innovation indicates that more attention needs to be paid to the institutional mechanisms that manage the innovation process, i.e. to RIS3 governance itself. Such mechanisms appear important, among the others, for a successful Entrepreneurial Discovery Process (EDP), which represents a significant institutional novelty in many areas of the EU. The EDP is the mechanisms that bring together actors from the quadruple helix to identify areas for investment and to keep pursuing such investment (Foray, 2014; Valdaliso et al, 2014; Marinelli and Periañez Forte, 2017; Marinelli et al., 2016). Effective governance and adequate institutional support is needed to provide the right incentives and structures to involve a diversity of stakeholders (i.e. firms, higher education institutes, public research centres and members of the civil society) and avoid vested interests that could constrain the entrepreneurial transformative process (Rodríguez-Posé et al., 2014; Valdaiso et al., 2014).

2.2 How should we look at S3 governance? Multiple dimensions and coordination challenges.

Innovation policies that aim to address grand societal challenges, such as RIS3, show the importance and difficulties of articulating different policy aspects, instruments, rationales and actors (Martin, 2012; Boon and Edler, 2018; Magro et al., 2014; Matti et al., 2017). Policy spaces are increasingly portrayed as complex due to the possible interaction of different governance arenas, administrative levels of governance (i.e. local, regional, national and supranational), instruments, actors and policy goals across time (Flanagan et al., 2011; Magro and Wilson, 2013).

Acknowledging such complexity is a pre-requisite of any analysis of S3 governance. Luckily, the literature has formulated a typology of dimensions that can support us in our endeavour (Borrás, 2008; Flanagan et al., 2011; Magro and Wilson, 2013; Magro et al., 2014, Flanagan and Uyarra, 2016). Namely:

- **The multi-layer dimension** distinguishes between political, administrative and operative actors (Magro et al., 2014).
- **The multi-level dimension of governance** comprises the different administrative levels of governance (i.e. local, regional, national and supranational) (Flanagan et al., 2011).
- **The policy-mix dimension** refers to the diversity of instruments from different policy domains (Flanagan et al., 2011; Magro and Wilson, 2013).

These dimensions allow identifying different **coordination challenges**, which are common in such dense institutional networks, and yet underexplored by the literature.

3 Research objectives and methodology

3.1 Research objectives

In this study we explore the multi-dimensional nature of RIS3 governance by comparing Extremadura (Spain) and Puglia (Italy). We focus on two less-developed regions as institutional aspects appear, in such context, crucial for regional development.

We explore in depth the multi-layer nature of RIS3 governance and review the **strategic/political, technical/administrative** and the **bottom-up/operative** layers. Once we achieve a solid understanding of S3 multi-layer governance structure, we look at the **multi-level aspects**, exploring the relationship between the regional and national level. In both cases we pay specific attention to **coordination challenges** and mechanisms as they appear largely underexplored in the literature. Analysing these two aspects we are able to draw some implications on the **policy-mix**, that is the policy tools that can be deployed to reach the RIS3 objectives.

3.2 Data collection

The paper is based both on desk analysis and primary data collection through interviews. The desk analysis covered all the documents related to RIS3, available on the websites of the relevant bodies of the two regions.

The in-depth interviews were conducted in the first half of 2018 and targeted, per each region:

- 1) Two members of the governance system with strategic responsibilities from the public sector;
- 2) Two members of the governance system with technical responsibilities;
- 3) Two stakeholders involved in the governance system (one from **the** private and one from the research sector);
- 4) One member of the national governance system for RIS3.

The selection of the interviewees followed two main criteria:

- (1) "high responsibility" for selecting participants at the strategic and technical layers;
- (2) "engagement and informative value" for selecting participants at the stakeholders' level.

3.3 Analytical framework

The comparison between the two regions revolves around the organisation of the governance system between the different layers, levels of governance and the coordination challenges these entail. In particular, we compare Puglia and Extremadura across five elements, which can be grouped under **the multi-layer** and **multi-level** dimensions. Namely:

Multi-layer dimension:	Multi-level dimension:
<ul style="list-style-type: none">• RIS3 strategic governance• RIS3 technical governance• Engagement of stakeholders through the policy cycle• Coordination across regional governance bodies/layers	<ul style="list-style-type: none">• Relationship between the national and regional levels

4 Techno-Economic Overview

4.1 Puglia

Puglia (Apulia) is one of 20 Italian regions, located in the Southeast of Italy. With an overall surface of 19.540,9 km², it is the seventh largest Italian region. It is also one of the most densely populated regions with its 4.1 million residents (in 2017) and a population-density of 208 inhabitants per square kilometre (in 2017). Puglia is divided up into 6 provinces, with Bari being the capital. Puglia lags behind the national economy in terms of economic development: in 2016, the regional nominal GDP per capita, with a value of 17,800 euros, was lower of 35.7% compared to national average (27,700 euros). Moreover, in the same year, GDP per inhabitant was 62% of the EU-28 average (EUROSTAT). The quality of government appears to be below the Italian average yet, it is showing a positive trend (see Annexe 1).

The amount of investment in R&D in 2015 was about 715.6 million euros (EUROSTAT, 2018) equal to 1.01% of regional GDP. The regional contribution to Italian investment in R&D was about 3.2% in 2015. The higher education sector accounts for about 50% of this investment, followed by the business enterprise sector that accounts for 36.8% and by the government sector that accounts for 11.9%. Persons with tertiary education and employed in science and technology represent 11.2 of active population, below the national and EU28 average (14 and 20.1, respectively in 2013).

In 2012, with a total number of 38.65 patent applications at the European Patent Office (EPO), Puglia accounts for 1.08% of all the national applications.

The research infrastructure in Puglia comprises 4 public Universities, 1 private University, and various public research affiliations of National Research Council (including 6 institutes, 19 territorial subdivisions and 1 organisational support unit). Puglia also hosts a research centre of ENEA, the National Agency for New Technologies, Energy and Sustainable Economic Development, and some research units of CREA, the Council for research in agriculture and the agrarian economy analysis. In 2016, more than 13.2 thousand Apulian students have graduated in the regional universities, with a prevalence of those in the social sciences (37.4%), followed from those graduated in scientific degrees (31.2%)

To fully understand the Apulian governance of RIS3 it is necessary to know that, since 2001, research and innovation policies are subjects to *concurrent legislative competence*: regions have independent legislative power yet they have to respect the fundamental principles defined by national laws. Puglia has traditionally used such competences to foster economic development. Indeed, in the programming periods preceeding the introduction of RIS3, regional Authorities had already promoted several initiatives to support regional innovation activities.

The RIS3 of Puglia Region, SmartPuglia 2020, was formally approved in June 2016 and is the result of a long and articulated participative process launched in 2013 by the Region and supported by ARTI (the Regional Agency for Technology and Innovation). Puglia defined three Priority Areas of the RIS3: "Sustainable Manufacturing", "Human and Environmental Health" and "Digital, Creative and Inclusive Communities" based on the identification of the most important Key Enabling Technologies (KETs) for the Region. For each of these areas, SmartPuglia2020 identified two levels of sub-priorities (named "Innovation Value Chains" and "Innovation Fields"). The regional investment in RDTI comes largely from Structural Funds (National or Regional Operational Programs) and National Cohesion Funds, that mainly finance National Strategy for Smart Specialisation.

The financial framework of the RIS3 of Puglia Region has defined a budget of around € 1.1 bn, with a substantial contribution of Thematic Objective 1 "Research and Innovation", that is € 672 mln. The Strategy will be implemented mainly through the policy mix of Thematic Objectives 1 "Research and Innovation", 2 "Digital Agenda" and 3 "SME Competitiveness", as defined by the Regional Operational Programme.

Furthermore, Puglia has been actively managing the exploitation of synergies between ERDF, H2020 and national funds, mainly through a skillful use of co-funding and eligibility criteria. Given the importance of Structural Funds and the absence of ordinary resources in the financial framework of Puglia RIS3, the Managing Authority of the Regional Operational Programme has an important role in the governance of the Strategy, as we will see in more detail in paragraph 5.

Table 1. Key indicators - Puglia.

	Puglia	Italy	EU28
Key economic indicators (2016)			
GDP per capita	17800	27700	29200
% of employment Agriculture, forestry and fishing; mining and quarrying	8.7	3.9	4.4
% of employment in High-technology sectors	1.4	3.4	4.0
Key HRST indicators (2016)			
% of active population Persons with tertiary education (ISCED)	17.6	21.2	33.3
% of active population Persons employed in science and technology	21.4	28.7	32.6
% of active population scientists and engineers	2.9	4.1	7.2
Key RTDI indicators			
Intramural R&D expenditures Euro per inhabitant 2015	175	364.5	593.5
Patents applications per mln inhabitant 2012	9.54	60.21	-

Source: Eurostat

4.2 Extremadura

The Region of Extremadura is an Autonomous Community (CA) ("Comunidad Autónoma") located at the south-western part of Spain. It is bordered by Portugal to the west, by the CA of Castile and Leon to the north. The Region hosts 2 provinces: Cáceres and Badajoz. The main urban centres are Badajoz, Caceres and Merida (the regional capital). GDP per capita levels are quite similar between provinces, being Cáceres the province with the highest GDP per capita (€16,500 against €15,800 in 2015). Extremadura lags behind the national economy in terms of economic development: in 2016, the regional GDP per capita was a third lower than the national average (16,600 vs 24,100) and 63% of the EU-28 (EUROSTAT). The quality of government in Extremadura is higher than the Spanish average though the two have converged over the years (see annexe 2).

The R&D investment level in Extremadura is low, representing 0.8% of total Spanish GERD in 2016 and ranking 14th out of 17 Spanish regions (ICONO-INE, 2017). Research and development activities rely heavily on the public sector for both funding and execution. The academic and research institutions that play a significant role within the R&I system of Extremadura are the following: The University of Extremadura (UEx) with 1,897 research personnel in the 2015-16 academic year (MEDU-2017) and 21,265 students enrolled in the 2014-15 academic year (MEDU, 2016). There are also several units of the UNED (Universidad Nacional de Educación a Distancia), an open university.¹ The R&I regional system also includes: Public Research Bodies (PRB) (e.g. the Regional Research and Technology Centre -"Centro de Investigaciones Científicas y Tecnológicas de Extremadura"- CICYTEX)², the Health Service of Extremadura (SES) and other private

¹ Data at regional level it is not publicly disclosed by the UNED.

² Other PRB include: Instituto Tecnológico de las Rocas Ornamentales y Materiales de Construcción (INTROMAC); Centro de Cirugía de Mínima Invasión (CCMI); Fundación Computación y Tecnologías Avanzadas

Technology centres. In addition, the Foundation FUNDECYT-Parque Científico y Tecnológico de Extremadura" plays an important role managing the RIS3 (see below).

Extremadura's RIS3 has five vertical specialisation areas (sectorial) ("Áreas de Excelencia"):

1. Agro-food,
2. Clean energies,
3. Tourism,
4. Health,
5. ICT.

Horizontal priorities are organised in two "Grandes prioridades":

- Sustainable use of natural resources
- Technologies to improve quality of life

These main priorities are articulated in four horizontal specialisation areas ("Ámbitos de actuación"):

- **Culture** of innovation and entrepreneurship,
- **Talent** specialised to mobilize the identified challenges and specialisation areas,
- **Business structure** to ensure competitiveness, and
- **Infrastructures** to develop the region.

Like Puglia, Extremadura is considered an active region in terms of RDI policy, being engaged in several EU and national projects and networks.

As for Italy, to understand how RIS3 governance is organised, one needs to frame it against the national distribution of research, innovation and higher education competences. The Spanish System of Science, Technology and Innovation is characterized by the coexistence of different regional research and innovation systems, with different levels of scientific and technological development. In this "system of systems", as indicated in Article 149.1.15 of the Spanish Constitution, the State has exclusive competence in terms of promotion and general coordination of research scientific and technical, while the promotion and financing of R&D&I is a responsibility shared between the General State Administration and the Autonomous Communities³. RIS3s are ingrained in a broader system, where the regional government is fully responsible for the strategy of smart specialisation, whilst the OP Managing Authority lies at the national level. Regional government is also responsible for universities and innovation policy. The current regional plan for Research and Innovation (2017-2020) commits a budget of 844mlns, as compared to 138mlns allocated to TO1 in the regional ERDF operational programme.

de Extremadura (COMPUTAEX); Centro Nacional de Agricultura Ecológica y de Montaña; Centro Nacional del Cerdo Ibérico.

³ PLAN ESTATAL DE INVESTIGACIÓN CIENTÍFICA Y TÉCNICA Y DE INNOVACIÓN 2017-2020

Table 2. Key indicators – Extremadura.

	Extrem.	Spain	EU28
Key economic indicators (2016)			
GDP per capita	16600	24100	29200
% of employment Agriculture, forestry and fishing; mining and quarrying	12.5	4.5	4.4
% of employment in High-technology sectors	1.4	3.8	4.0
Key HRST indicators (2016)			
% of active population Persons with tertiary education (ISCED)	29.8	39	33.3
% of active population Persons employed in science and technology	16.8	24.1	32.6
% of active population scientists and engineers	4.7	6.1	7.2
Key RTDI indicators			
Intramural R&D expenditures Euro per inhabitant 2015	107.2	283.6	593.5
Patents applications per mln inhabitant 2012	1.36	27.36	-

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5 Comparing governance systems: layers, levels and policy mix

5.1 The multi-layer dimension

5.1.1 Strategic Governance

Providing strategic direction is one of the key missions of governance. In both regions, the RIS3 reflects a demanding exercise of political consensus and stakeholders' engagement. Leading the implementation of RIS3 implies being accountable to all those who contributed to the definition of the strategy, overseeing the coordination among the different aspects of implementation, respecting for the vision originally established.

Puglia and Extremadura approach the challenge in distinct ways. In Puglia, the regional administration established -for all its competences- an organisational model called "Ambidextrous Model for innovation of the Regional Administration – MAIA" characterized by the presence of 2 elements: *exploitation capacity*, referring to the actions aimed at exploiting the existing knowledge internal to the regional government and the *exploration capacity*, aimed at creating a competitive and sustainable advantage through the acquisition of new knowledge and experimentation of new possible innovation trajectories⁴. Reflecting the model, in the Regional civil service, the six core Government Departments conduct the exploitation activities and are accompanied by six Strategic Regional Agencies which are dedicated to the exploration activities.

The Governance of RIS3 reflects this logic, with the exploitation and exploration capacities being attributed to the Regional Ministry for Economic Development, Innovation, Education, Training and Jobs (Regional ministry for Economic Development hereafter) and to the Strategic Agency ARTI (Regional Agency for Technology and Innovation).

Within this framework, the President of the Puglia Region is the political responsible for RIS3 and is accompanied -in its strategic decisions- by the Director of Department for Economic Development and the President of ARTI. Together they are responsible for decisions on definition, implementation and revision of the RIS3. The fact that the regional department is involved in RIS3 through its top management means that all the different policy actions relevant for RIS3 (such as those related to education and training) are more easily coordinated, supporting the implementation of a multi-fund OP, exploiting resources from ESF and ERDF. In their current set-up, the strategic governance level offers limited and ad hoc opportunity to discuss and interact with other actors of the regional innovation system (such as universities and enterprises). At the strategic level, the governance body – whilst embracing the long-term transformative vision of RIS3- is largely concerned with supporting RIS3 implementation mainly through the Regional Operational Programme.

At the strategic level, the RIS3 governance structure **in Extremadura** is shared across three governance bodies (RIS3: 32-5):

- a. The **Commission of Science Technology and Innovation of Extremadura** has the highest strategic responsibilities and is in charge of the design and implementation of policy measures on R&I (Research, Development and Innovation).
- b. **The RIS3 Technical Committee**. It includes representatives from the regional government and from the University of Extremadura (UEx). It is responsible for the design of the strategy, including the monitoring and supervision of the Management Team. It validates and modifies the objectives and gives the final approval of the RIS3.

⁴ (DGR, 31 of July 2015, n. 443).

- c. **Advisory Council for Science Technology and Innovation.** It includes the head of the regional ministry with R&I responsibilities, head of the management of R&I responsibilities, representatives of the main trade unions, business organisations of the region and experts on innovation. It is in charge of supervising the R&I areas of strength of the region.

All the afore-mentioned bodies are under the umbrella of the Regional Ministry of Employment, Industry and Innovation of Extremadura.

To sum up, at the strategic level, Extremadura has a more inclusive approach, engaging stakeholders through the Advisory Council for STI. In Puglia, the strategic governance level appears more closely linked to OP management. Such different arrangements reflect the broader policy set up of the two regions. Extremadura has a large budget for STI, as STI competences are largely implemented at the regional level. RIS3, in other words, is a comparatively smaller element and the STI governance system is thus adjusted to fit also RIS3.

Box 1 Strategic governance - Key features

Extremadura	Puglia
<ul style="list-style-type: none"> • Nested in broader STI governance. • Participatory 	<ul style="list-style-type: none"> • Strongly linked to OP management.

5.1.2 Technical Governance

In Puglia, the **"technical level"** of RIS3 governance includes staff from different public entities namely, three people from the Service for Industrial Research and Innovation (a Unit of the Regional Department of Economic Development), three people from the Management Authority of the ROP and five people from ARTI. Whilst a technical body is defined in the RIS3 document and named "Team RIS3", such body it has not yet been formalized.

The Regional Agency for Technology and Innovation (ARTI) has the aim of promoting the Regional Innovation System, contributing to the elaboration of regional strategies for innovation and competitiveness and supporting the collaboration between enterprises and university, as well as helping international links. ARTI, whose responsibilities go beyond RIS3, provides analytical support and is also responsible for RIS3 monitoring and evaluation activities, collaborating with the Regional Evaluation Unit⁵, as well as for stakeholders' engagement. ARTI is provided with high-skilled human resources trained at the doctoral level. The "Team RIS3" takes advantage of the Bruxelles Office of Puglia Region to be constantly updated on EU matters.

As Team RIS3 has not yet been formalized and its Coordinator hasn't been named, there are no clearly defined roles and responsibilities. Nevertheless, such a team would be tasked with the following activities:

- Monitoring and Evaluation of interventions financed by the ROP Puglia 2014-2020 contributing to the implementation of RIS3;
- Results of the update of the Apulian Innovation Scoreboard (annual);
- Update of the survey on KETs;
- Analysis of RIS3 monitoring results (annual);
- Mapping update of public innovation needs.
- Organising periodic meetings with stakeholders to share monitoring results and to discuss strategic issues, including possible new instruments to support the regional innovation system.

⁵ The Regional Evaluation Unit was created under National Law 144/1999. It is a unit of the Department for Economic Development, Innovation, Education, Training and Jobs, Section Unitary Programming. It provides analytical support for programming and evaluation activities.

Given the lack of institutionalisation, in some cases, it can be difficult for the technical body to effectively perform its functions, especially those activities that rely on the collaboration and coordination with other Government Departments, such as monitoring. Indeed as RIS3 objectives demand the contributions of different policy areas and instruments, its monitoring requires a combined analysis of different interventions. Furthermore, whilst the informal structure provides flexibility it also makes the governance system vulnerable to unforeseen changes or re-organisations.

In Extremadura the **coordination and management of RIS3** includes a so-called **RIS3 Management Team** (General Secretariat of Science, Technology and Innovation⁶ + RIS3 Technical Office). The latter manages the interactions between three levels of governance in the region. A new agreement has been signed on 24 August 2017 between the General Secretariat of Science, Technology and Innovation and FUNDECYT-PCTEX that guarantees competences and funding for the 2017-2020 period ([DOE 163](#)). It is considered a coordination mechanism among Extremadura System of Science, Technology and Innovation (SECTI) bodies. The RIS3 Management Team can be considered as a "hybrid" body that integrates the strategic level of governance (i.e. General Secretariat of Science, Technology and Innovation) and the coordination and management level (i.e. RIS3 Technical Office), being the Head Director of FUNDECYT-PCTEX also a member of the RIS3 Technical Committee.⁷

Box 2 Technical governance - Key features

Extremadura	Puglia
<ul style="list-style-type: none"> • Hybrid body • Formalised structure 	<ul style="list-style-type: none"> • Informal structure involving government departments and agencies

5.1.3 Stakeholders engagement throughout the policy cycle

In Puglia, the Smart Specialisation Strategy is the result of a long and inclusive process based on the involvement of all the relevant stakeholders, launched by the Region with the support of ARTI. The original aim of such stakeholders mobilisation was to analyse the importance of Key Enabling Technologies (KETs) for the region, identifying a sustainable vision for the future. The priorities identified in the RIS3 are the result of the activities of six thematic "bottom-up bodies", each dedicated to a KET, aiming at exploring the state of the art of each KET in Puglia, the existence of critical mass and specific trajectories and the possible applications to the productive system.

In the RIS3 implementation phase, the Region plans to develop groups of stakeholders/innovation performers from businesses, public research and citizens. The Region together with ARTI is currently engaged in an in-depth analysis to decide whether to organize the working groups and the stakeholder involvement around KETs or RIS3 priority-areas. One of the main challenges, in this respect, is to reach the innovative firms, that generally do not have much contact with the Public Administration, and firms that have an innovative potential but are not showing an explicit innovation demand. Remarkably, this challenge is equally perceived by the public administration and the private sector. Confindustria Puglia, the local confederation of industry, underlines its difficulties in communicating the new innovative approaches of RIS3 to the enterprises. For this reason, **Confindustria** is starting a new project aimed at creating some "**mediators**", people able to dialogue directly with the enterprises, communicating new approaches and the new instruments.

At the **bottom-up level** governance, Extremadura has developed a more structured approach, focussing on Key Agents of the Quadruple Helix. Key agents are classified into

⁶ The General Secretariat of Science, Technology and Innovation is the responsible for R&I policy at regional level, which is under the "Consejería de Economía e Infraestructuras", i.e. the regional ministry for Economy and Infrastructure. The General Secretary is politically appointed.

⁷ As well as the RIS3 Technical Body, the region also has an office for innovation, which covers similar tasks but for the areas that do not fall under the RIS3.

four groups: **knowledge providers; knowledge and innovation disseminators; public sponsors of innovators; and final users.** They provided input throughout the different phases of RIS3 through forum, workshops and other methodological tools. In the evaluation process, these have been organised into five thematic groups, according to vertical (sectoral) specialisation areas. The consensus on the importance of RIS3 as a mechanism for regional change appears to have also spread across stakeholders whose participation has, over time, included also members of the non-governmental sector, which are typically harder to engage. The region has managed to successfully engage stakeholders in the design and monitoring process of RIS3. The RIS3 management team has also the responsibility to connect bottom-up and top-down decision-making process (i.e. RIS3 Management Team). This unit has implemented a broad toolkit of methodologies to guarantee an appropriate stakeholder involvement in the design and monitoring of the RIS3 implementation.

Box 3 Bottom-up dimension - Key features

Extremadura	Puglia
<ul style="list-style-type: none"> • Formalised structure • Challenges: <ul style="list-style-type: none"> Difficult to engage private sectors Civil society not really involved 	<ul style="list-style-type: none"> • Structure being formalised • Creation of a "mediator" from industry • Challenges: <ul style="list-style-type: none"> Difficult to engage private sectors and detect potentially innovative SMEs

5.1.4 The coordination across regional governance bodies/layers

As highlighted above, the RIS3 governance system in Puglia is characterised by a limited degree of formalisation, the strategic and technical level involve clearly identified actors/entities. However, their functions are not officially defined. Whilst this has the advantage of giving flexibility and enabling a fluid communication, it also creates some challenges, especially where a clear attribution of responsibilities is needed to manage multiple or to some extent conflicting objectives. Furthermore, it makes the system vulnerable to unexpected changes, which cannot be managed without the certainty of formally attributed responsibilities. All in all, the limited degree of formalisation partly reflects the fact that whilst RIS3 offers a long-term transformative vision for the region, the governance of RIS3 largely responds to the mid-term needs of the OP implementation, which is the main instrument for its deployment and which also covers other areas of regional development. This situation is far from uncommon across the EU and reflects the requirements of current ESIF regulations. The latter pose stringent demands for OPs implementation, whereas RIS3 receives limited attention beyond the ex-ante conditionality.

In Extremadura, the interactions between the three layers of governance are quite structured. Three different mechanisms guarantee the interaction between stakeholders and governance layers, which are envisaged in the monitoring and evaluation mechanisms:

- **RIS3 working groups** where key agents of the performance layer review the implementation results of the RIS3 and propose changes if necessary. They are organised across vertical specialisation areas (sectorial) ("Áreas de excelencia").
- **General Fora** includes all RIS3 agents and has a general scope (non-thematic). It allows to have a global view of the RIS3; to cross-fertilize ideas, and to propose a reorientation of priorities and actions if necessary.

Working groups and General Fora gather approximately on a yearly basis. Technical managers for the execution of RIS3 are present on them.

The small size of the regional system facilitates communication among agents. The regional development agency of Extremadura and the RIS3 Management Team (i.e. General Secretariat of Science, Technology and Innovation) are under the umbrella of a

single regional body (i.e. The regional ministry of Economy and Infrastructures "Consejería de Economía e Infraestructuras"). The RIS3 Management Team (a hybrid body) is the link between the region and the Managing Authority of the Operational programme, which is located at the national level.

5.2 The multi-level dimension

5.2.1 The interaction between the regional and national level

In Italy, the design of the National Strategy for Smart Specialisation, and of the 21 regional ones, represented a huge challenge and required an extensive deployment of entrepreneurial knowledge and resources. Equally, the implementation phase is complex and demanding since there are co-existing national and regional programmes, implementing the national and the regional RIS3s.

This complex system, characterized by a multitude of actors with various responsibilities at different institutional levels, requires clear, shared objectives and a firm commitment to multilevel governance. The coordination/relationship between the regional and national level revolve around two aspects:

- 1) The development of a common and thorough understanding of the different RIS3s in the country, through an appropriate monitoring system
- 2) The exploitation of synergies between regionally managed OPs and nationally managed ones. Indeed, Italy has 2 national operational programmes dedicated to the whole South.

To facilitate national/regional coordination, the National Agency for Territorial Cohesion has set up mechanisms supporting regional strategies coordination and promoting synergies between national and regional RIS3s.⁸ First of all, in order to make the necessary information for RIS3 coordination available, the Unit of the Agency responsible for monitoring of RIS3s (NUVEC1) defined some instruments to collect, compare and synthesize data from each regional system. Furthermore, in July 2017 the Agency for Territorial Cohesion launched a project aimed at creating thematic working groups and increase the exchange of views between regional and national administrations focused on the same priorities. This project also aims at promoting information flows between administrations and communicating and circulating project results by setting up a National Platform "RIS3 ITALIA".

Despite the fact that in Spain there is also a national OP and a national RIS3⁹, the most pressing issues emerging when looking at the relationship between Extremadura and the National level are:

- the "rigidity" and bureaucratisation of the implementation mechanism of ERDF, as the managing authority of the regional OPs lies at the national level;
- the distribution of competences across governmental administrative levels (central and regional and across government departments).

Spain is a highly decentralised country. Its regions have political responsibilities for research and innovation and are in charge of university funding. They play an important role in research and innovation in GBAOR terms (ERAC, 2014). This decentralised R&I system poses some challenges in terms of governance (OECD, 2006; ERAC, 2014).¹⁰

⁸ The Agency for Territorial Cohesion is responsible for monitoring and implementing the National RIS3 and for coordinating the 21 regional ones.

⁹ This is despite the fact that in Spain there is also a national OP and a national RIS3. The Ministry of Finance ("Ministerio de Hacienda") is responsible for the efficient management and implementation of the OP for Spain, being the Managing Authority of ERDF, while RIS3 national responsibilities lie on the Ministry with R&D responsibilities (when the fieldwork was carried out, Ministry of Economy, Industry and Competitiveness – MEIC "Ministerio de Economía, Industria y Competitividad", currently Ministry of Science, Innovation and Universities –MICINN "Ministerio de Ciencia, Innovación y Universidades").

¹⁰ The Spanish Constitution grants powers to both the national and regional administration for promoting scientific and technical research. National authorities are in charge of the coordination in this area (Art.

Allocation of competencies in other, related, policy areas are not always clearly defined or operationalised, making sometimes difficult to implement some policy instruments within the OP at the regional level. This may generate conflicts of attributions with implications for RIS3 implementation. At the same time, and in line with what is happening in Italy, the national level is developing tools to promote synergies between national and regional RIS3s. In particular the Network of Public Policies for RDTI ([RED IDI](#)) paid an important role, developing thematic working groups (energy, health, water, tourism, design and evaluation and monitoring systems) to improve cooperation and coordination among all Spanish administrations (Fernandez-Zubieta et al., 2017:6).

Box 4 Multi-level dimension - Key features

Extremadura	Puglia
<ul style="list-style-type: none"> • The MA for the regional OP is at the national level: Need to manage overlaps among regional and national competence • The national level offers peer learning opportunities through Red I+d+I 	<ul style="list-style-type: none"> • Focus on synergies between national and regional OP, search for coordination between national and regional MAs. • The "Agenzia della coesione Territoriale" offers peer-learning opportunities and coordinates the regional monitoring systems to give a unified national picture.

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149.1.15 and 148.1.17). However, allocation of competences relating to innovation is not mentioned in the Constitution. See Gómez (2007).

6 Comparing governance systems: layers, levels and policy mix

This (mainly descriptive) paper has compared some key characteristics of the RIS3 governance system in Puglia and Extremadura. The reason for doing so is that very little is known about the practicalities of RIS3 governance within the EU and limited guidance, grounded in empirical evidence, is currently available. This is despite the fact that the policy narrative places a lot of emphasis on the fact that good RIS3 governance, reflecting a bottom-up and placed-based policy, should improve regional innovative and economic performance, increase stakeholders' ownership of the policy-process and ultimately improve equity by reducing regional inequality.

The two regions under scrutiny share several characteristics: they are both less developed regions, in countries that have a high level of de-centralisation (with competences on research and innovation shared between the national and regional level), and both classified as moderate innovators by the EC regional innovation scoreboard. Conceptually the paper has relied on the new approaches to governance, which aim to address the complexity and uncertainty of the current policy agenda. We have shown the importance of applying different policy dimension (multi-layer, multi-level and policy mix dimensions) in order to understand the interactions and tensions that can occur in the policy process. We have also shown the importance of setting formal mechanism of coordination to improve interactions between different positions of governance (multi-layer dimension). The paper has compared how the two regions along five dimensions: the strategic, technical and bottom-up levels of governance and their interaction (multi-layer dimension of governance) and the relationship between the national and regional level (multi-level dimension of governance).

The analysis allows some important conclusions. First and foremost, it is impossible to understand RIS3 governance without framing it in the broader national and regional STI setting. In the case of Extremadura, a region which manages a large STI budget, RIS3 governance is integrated into the broader research and innovation system, building on previously existing strategic bodies. In Puglia, the dynamics of RIS3 governance, despite it being concerned with broader aspects of regional development, are more closely linked to those of the regional management of the operational programme, which funds the largest share of public investment in STI.

Both regions have been able to develop functioning governance systems, however, the degree to which the different governance layers (strategic, coordination and management, and performance levels) and functions are clearly formalised, varies in the two regions. In Extremadura, the interactions between the three layers of governance appear to have been facilitated due to the implementation of a formalised "hybrid technical body" -in the interface of the strategic and coordination and management level. In Puglia, the technical body (Team RIS3), including the Managing Authority of the Regional Operational Programme, the Service for Industrial Research and Innovation and the Regional Agency for Technology and Innovation (ARTI), has not been formalised. So there are no clearly defined roles and responsibilities, with the consequence that the activities that rely on the collaboration and coordination with other government departments face more uncertainty in their management. Furthermore, lacking formalisation, the system is more vulnerable to unexpected administrative or organisational changes.

The relationship between the national and regional level is very different in the two countries (multi-level dimension). In Italy, such interaction is determined by the pursuit of synergies between the national and regional operational programmes, by the need to coordinate monitoring efforts and by the widespread necessity of shared learning opportunities. In Spain, whilst RIS3 and the regional OPs are de facto governed

regionally, the managing authority –which is concerned with administrative compliance– lies at the national level. The relationship between the national and regional dimension of RIS3 revolves largely around the administrative management of the OP (and State Aid regulation) and the management of overlaps in national and regional competences. At the same time, the Spanish government has also set in motion activities to promote dialogue and peer-learning among regions (e.g. Red IDI). The comparison shows that interaction between layers and levels of governance is crucial to successfully design and implement RIS3 strategy. They also highlight the importance of political engagement to ensure high-level coordination and facilitate long-term planning.

Whilst RIS3 aims at being multi-disciplinary and encompassing broad techno-economic and social domains, The analysis also highlights that in both regions RIS3 governance is bounded in terms of policy mix (that is, in terms of the policy instruments mainly concerned with RIS3 implementation). Indeed, the Apulian governance structure is largely linked to the OP management (which funds the lion-share of regional STI investment). In the case of Extremadura, in which the OP represents a fraction of the STI regional investment, the governance of RIS3 is largely linked to the governance of science and technology policy. Links with other relevant policy domains and their instruments (i.e. health, agriculture and education) are limited and not formalised, as it seems to be the case in most of the EU. It is not the aim of this paper to discuss the value and effects of such framework, it nevertheless appears important to acknowledge this aspect as something worthy of further analysis in the broader RIS3 debate.

To conclude, the study strongly supports the current proposal for the future programming period (EC, 2018), which poses that regions and member states should identify competent institutions or bodies responsible for the management of the smart specialisation strategy. This should allow RIS3 to be implemented in respect of the constraints of the OP, but without being a simple appendix to it.

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List of abbreviations and definitions

EC	European Commission
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
OP	Operational Programme
RTDI	Research, Technological Development and Innovation
S3	Smart Specialisation Strategy
STI	Science Technology and Innovation

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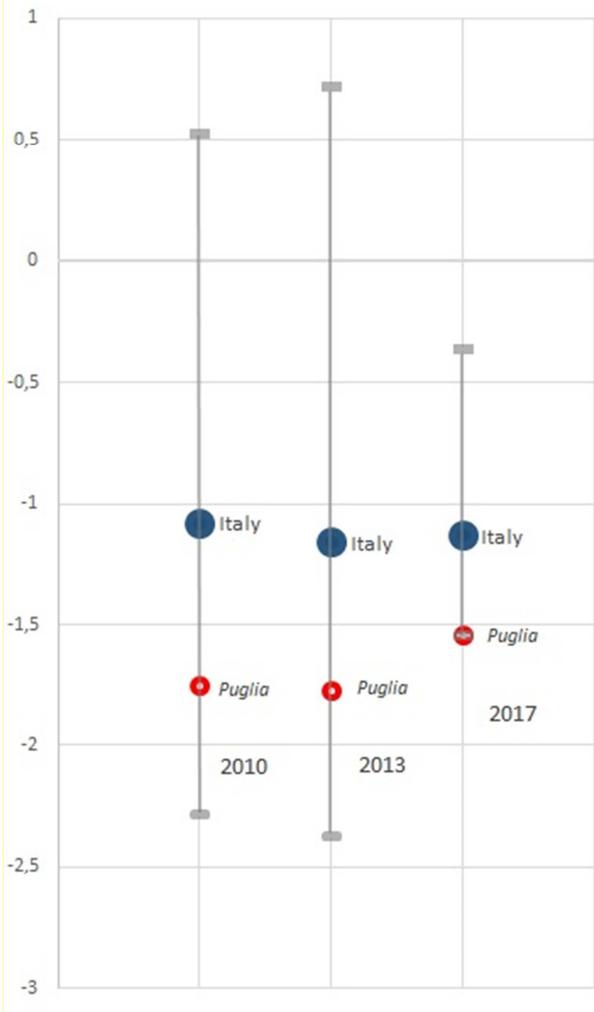
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Figure 1 Quality of Government (EQI) Italy-Puglia

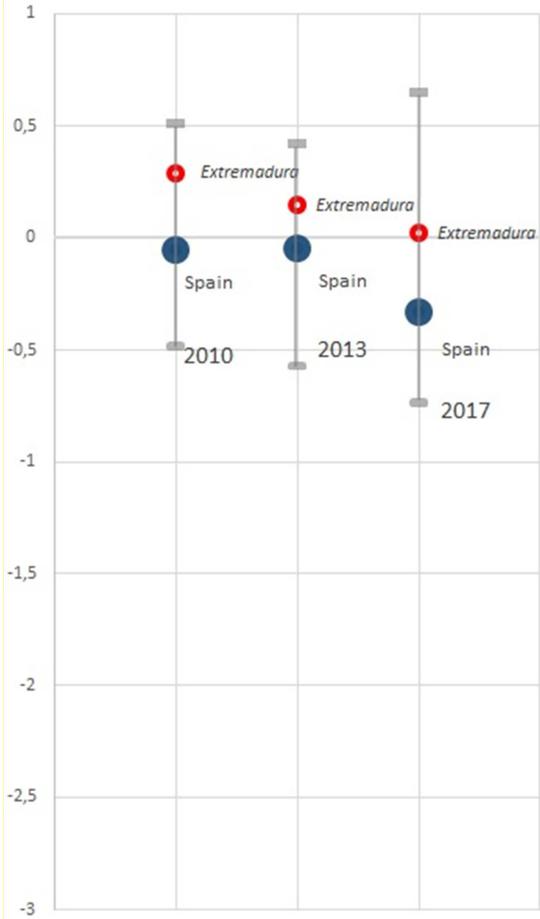


Source: own elaboration with European Quality of Government (EQI) data based¹¹

¹¹ Based on the Quality of government (QoG) data from the World Bank's "World Governance Indicators" (WGI). See Charon and Lapuente (2018) for more information.

Annexe 2. Quality of government in Extremadura

Figure 2 Quality of Government (EQUI) Italy-Puglia



Source: own elaboration with European Quality of Government (EQI) data based¹²

¹² Based on the Quality of government (QoG) data from the World Bank’s “World Governance Indicators” (WGI). See Charon and Lapuente (2018) for more information.

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