

Italian research network in the Mediterranean area: situation and outlooks for the future

ANTONIO ZINILLI

CNR-IRCrES, National Research Council of Italy - Research Institute on Sustainable Economic Growth,
via dei Taurini 19, 00185 Roma, Italy

Corresponding author: antonio.zinilli@ircres.cnr.it

ABSTRACT

We explore the relationship between Italy and Mediterranean countries in a specific funding program: Horizon 2020. Studying the collaboration patterns in the Mediterranean area is crucial for policy design aiming at reducing research fragmentation and fostering knowledge sharing and production. Empirical evidence is derived from a specific research network, projects funded between 2014 and 2017 in Horizon 2020 in three research domains (Social Sciences and Humanities, Physics and Engineering and Life Sciences). It reveals as research collaboration between Italy and Mediterranean countries is not sufficient to face the challenges of the future, yet. As a policy implication, it emerges that policy makers should consider incentives to foster successful collaborations in joint programs. This paper is complementary to the [video](#) presented by the author at Blue Planet Economy (BPE) European Maritime Forum 2021.

KEYWORDS: knowledge networks, research collaborations, Horizon 2020, Mediterranean area.

JEL CODES: F50, O30

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1 INTRODUCTION

Science, technology and innovation play a crucial role in contributing to the dialogue and development of Mediterranean area.

The aim of this work is to investigate the relationship between Italy and Mediterranean countries in a specific funding program: Horizon 2020 (H2020). Using data over the period 2014-2017 on EU funded projects, we observe the main partners of Italy in three ERC (European Research Council) research domains: Social Sciences and Humanities (SSH), Physical Sciences (PE) and Engineering and Life Sciences (LS).

The analysis of connections between Italy and the other Mediterranean countries in Horizon 2020 allows to understand which are Italy's main partners among the countries of the Mediterranean area and the level of integration in a specific research funding program. Being a research program funded by European Union (EU), we expect that the main collaborations of Italy are with the other countries of the European Union. The research questions are: which are the main non-EU Mediterranean countries that collaborate more with Italy? Are there differences among research domains?

We reflect on the Italian scientific partners involved in joint projects with reference to the research carried out in Europe, showing:

- 1) the network of Italian scientific partners in the European framework program;
- 2) an illustration of the Mediterranean country disparities existing in the scientific collaboration in three ERC domains through the observation of links.

Observing the Italian research partners in Horizon 2020 represents an important indicator to define the position of the different territorial areas in the Mediterranean and to characterize the weak points in order to invest resources for increasing the collaboration between the countries.

2 MATERIALS AND METHODS

The data used in this work stem from the RISIS project, European Research Infrastructure for Science, Technology and Innovation policy studies¹ (Zinilli, 2021; Spinello et al., 2021). The empirical analysis is based on the EUPRO dataset. EUPRO allows to represent the data on the collaborations of countries for projects funded in Horizon 2020 (H2020). The data extracted from EUPRO foresee the participation of at least one Italian organization (public or private) and another organization of another Mediterranean country in a joint project during the period between 2014 and 2017. In addition to Italy, the Mediterranean countries involved in our study are: Algeria, Bosnia and Herzegovina, Cyprus, Croatia, Egypt, France, Greece, Israel, Libya, Malta, Morocco, Montenegro, Palestine, Slovenia, Spain, Tunisia, Turkey.

The goal is to observe collaborations in joint projects funded in H2020 between 2014 and 2017 to understand the cooperation between Italy and the other Mediterranean countries. Following this goal, organizations represent interconnected nodes through joint H2020 projects. By joint projects we mean projects that have at least one affiliation located in Italy and in another Mediterranean country. The data at the organization level have been aggregated in order to observe the distribution at country level.

Each project has been classified according to the ERC domains, assigning each project the following three scientific domains: Social Sciences and Humanities (SSH), Physical Sciences and Engineering (PE), Sciences of Life (LS). Each project was assigned to a particular domain on the basis of the keywords and on the basis of the abstract of the project.

In the EUPRO dataset there is the possibility that an organization collaborates on multiple projects in the same year; we consider the intensity of the relationship among countries.

¹ Grant Agreement 824091 (RISIS: <https://www.risis2.eu>).

Furthermore, the matrices we deal with for counting the collaborations are indirect, i.e. the connections between organizations are symmetrical (for more information see: Zinilli & Cerulli, 2015; Zinilli, 2016). All metrics were standardized to allow comparisons between years.

3 RESULTS

The figure 1 shows the relationship among Mediterranean countries with respect to all ERC domains in the considered years (2014-2017). Closer countries to Italy indicate a higher number of collaborations.

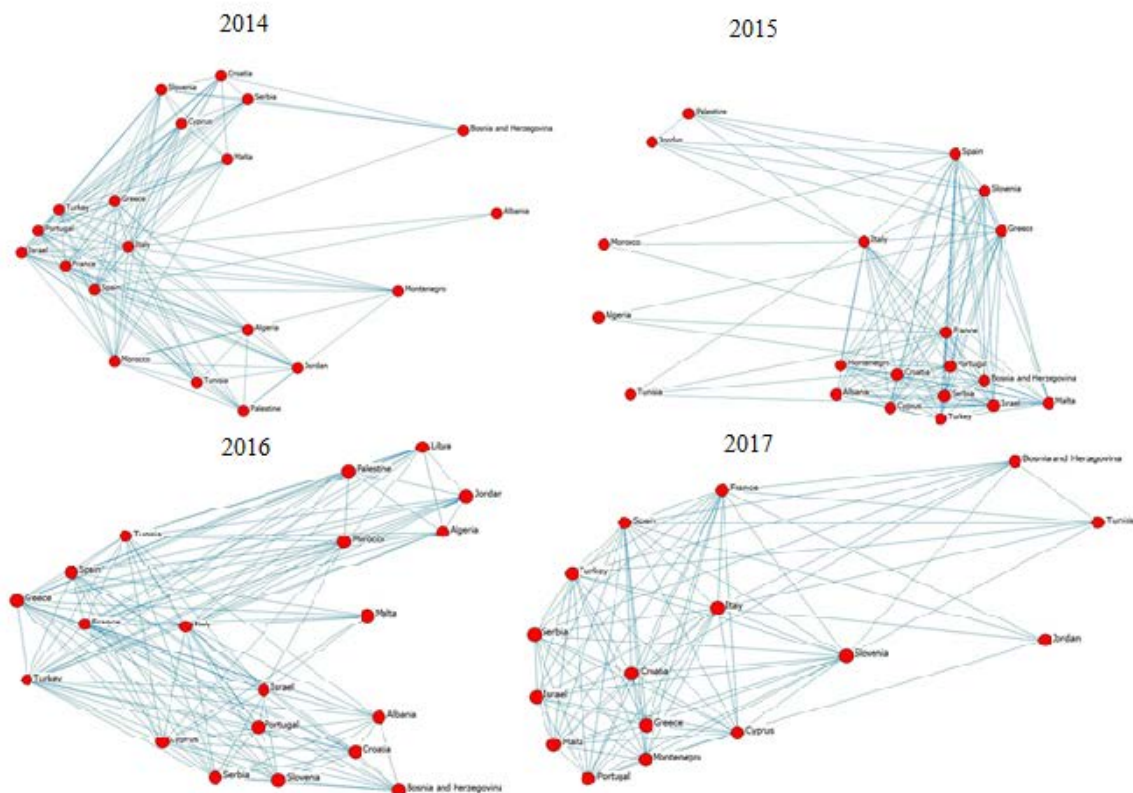


Figure 1. Joint project network between 2014 and 2017. Source: Author’s elaboration.

In 2014 we can observe a cluster composed of Italy, France, Spain, and Greece, which are the most important partners of Italy for the intensity of connections. Then, we find countries such as Portugal, Israel and Turkey. All other Mediterranean countries are in a peripheral position respect to Italy. In 2015, Italy has a central position (in the middle of the network). This means that it is no longer part of a cluster of countries with many connections between them, but seems to have more connections with other countries such as Slovenia, Croatia, Montenegro. In 2016, countries as Malta, Cyprus and Tunisia stand out with a similar importance in terms of collaboration with Italy. Finally, in 2017 the network appears to be denser. Only Tunisia, Jordan and Bosnia and Herzegovina are more isolated.

The next map (figure 2) shows the most important partners of Italy by ERC domains (Social Sciences and Humanities, Physics and Engineering and Life Sciences). The intensity of the color indicates the importance of a country in terms of number of connections with Italy.

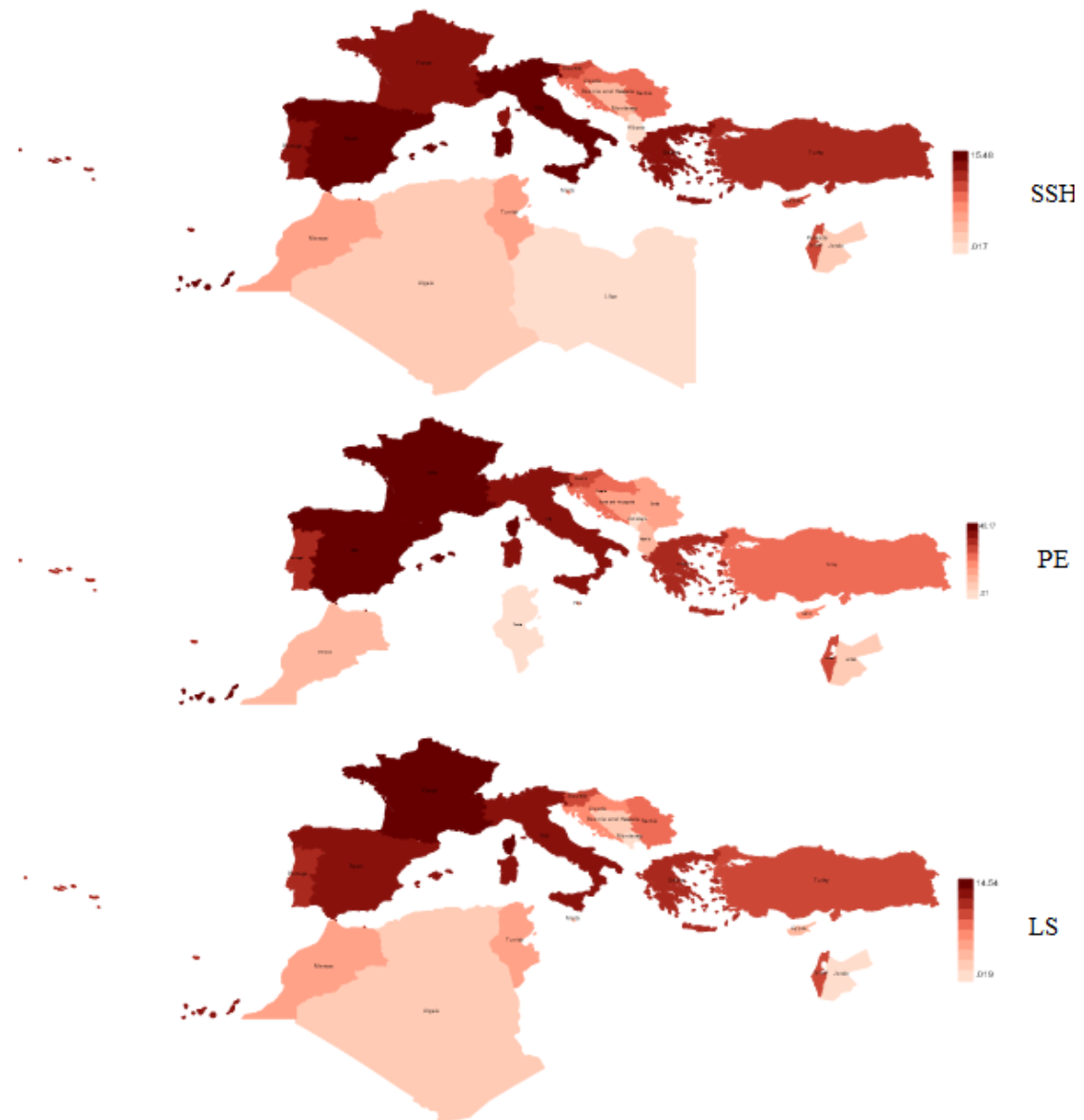


Figure 2. Map of the main Italian partners by ERC sector between 2017 and 2017. Source: Author's elaboration.

Looking at the figure, we note that for all three ERC domains France and Spain are the most important partners for Italy, followed by Portugal and Greece. Among the non-EU countries, we see that Turkey is the main partner of Italy in Horizon 2020. All the other countries have a marginal role in terms of collaboration with Italy in this specific European program. In particular, we can observe how the countries of North Africa have a very light color; this indicates that they have few connections with Italy.

4 CONCLUSIONS

The results show that in recent years Italy has had greater openness to collaborations with Mediterranean countries other than France, Spain, Portugal, and Greece; there is a higher number

of collaborations especially in joint projects relating to Social Sciences and Humanities. The North African countries seem to collaborate more with Italy in projects belonging to SSH domain.

Research collaboration between Italy and the other Mediterranean countries has increased in the last years, but it is still not enough. There is still a long way to go for true integration in research among the Mediterranean countries. Much still needs to be done for increasing cooperation on research innovation activities along the value chain in order to build a productive and resilient Mediterranean area where social wellbeing, sustainable prosperity and the good environmental status of the region are reached (Filippetti et al., 2019; 2020).

Italy together with the other Mediterranean partners have to rethink the role of multilateral, regional and sub-regional organizations, in order to make them better prepared to respond to fast-changing local and global conditions and to address the pressing demands coming from all Mediterranean societies.

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