

Title

New strategies towards internationalization of research? The opening up of national R&D programmes

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Aims and objectives

Open programmes and opening of national research programmes have gained importance as means for increasing international collaborations and for improving quality and efficiency of scientific research both at the national, European and international level (Optimat, 2005; EC 2008b; Svanfeldt, 2009; EC, 2008a). Thus, opening-up of national R&D programmes represents today in several countries an important political issue (Optimat, 2005) and in the European Commission' view (EC, 2008) it is a goal to be achieved in order to reduce fragmentation of research at the EU level and to support the creation of a truly integrated ERA (Pérez, De Dominicis and Guy 2010; Optimat, 2005; EC, 2008a). Whereas open programmes are quite rare, opening of national programmes represents a more diffused phenomenon which encompasses several issues besides funding decisions and level of spending (Pérez, De Dominicis and Guy 2010; EC, 2011; Optimat, 2005).

The paper aims at investigating whether and to what respect different styles and practices of opening of national R&D programmes are related to national research policies and strategies for the internationalization of research. The study also discusses if opening of national R&D programmes is shaped by scientific fields' characteristics. To that respect the way national research activities are organized, the normative frames and the organizations in charge for managing and funding research activities (i.e ministries, research agencies and councils) emerge to be relevant aspects in the decisions of opening national research programmes, to keep them national or rather to look for alternative ways for broader collaborations at the international level (es. through joint programmes, bilateral agreements or framework agreements for international collaborations) (Lepori 2011; Luukkonen, Nedeva, 2010). Nonetheless different facets of opening might depend on strategic choices related to scientific fields' importance in the national research context, knowledge advancements or, more generally, to fields' characteristics.

The following research questions drive the study. What rationales of opening can be detected? What factors can explain variations in degrees of opening of national R&D programmes? Are opening decisions fields' specific? Do opening of national research programmes represent a different internationalization option compared to bilateral and joint agreements for collaboration? To what extent open programmes and opening up of national R&D programmes support the construction of ERA?

The work relies on data collected by the JOREP project (Analysis of investments in joint and open research programmes), a contract funded by the European Commission [Contract. No. RTD/DirC/C3/2010/SI2.561034] under the Seventh Framework Programme. The project covers eleven countries which are (in alphabetical order): Czech Republic, Denmark, France, Germany, Italy, Netherlands, Norway, Poland, Switzerland, Spain and the United Kingdom.

Theoretical background

Opening of national research programmes should allow performers not belonging to the national research space to access to national R&D programmes (EC, 2008a). Often the existence of funding flows which cross national borders is the main criteria for labeling a programme as "open". Rather several dimensions are concerned. If aspects related to transfer of funding are often considered as politically sensitive issues, other aspects are mostly related to the "openness" degree of national research systems (Nauwelaers, Wintjes, 2009).

We represent opening of national R&D programmes as a much diversified phenomenon mostly shaped by national research systems' characteristics, by policies for internationalization of research and by scientific fields' issues (Pérez, De Dominicis and Guy, 2010). Scientific literature underlines as degrees and level of opening are related to

national R&D characteristics and opening decisions are embedded in national rules and instruments for transnational activities (Pérez, De Dominicis and Guy, 2010).

Nonetheless, different rationales and motivations can trigger policy makers' decisions of opening national R&D programmes, to keep them national or rather to look for different collaborative schemes (EC, 2012a). Opening national research to international cooperation could serve filling national scientific gaps, allowing national scientific communities to access to additional knowledge and assets, especially when national R&D capabilities are weak (Bonaccorsi, 2008; Pérez, De Dominicis and Guy 2010). This is also the case when changes within a disciplinary field occur which let emerge new and challenging issues to be tackled, needing additional knowledge and structural resources (Luukkonen, Nedeva, 2010; Svanfeldt, 2009). Thus opening of national R&D programmes can provide opportunities for economies of scale and scope when R&D activities are more and more challenging and need international efforts (Nauwelaers, Wintjes, 2009).

Rather opening can represent a strategic mean to serve national political and scientific interests: in this case opening could be aimed at strengthening collaborations with neighbor countries or could allow improving economic and political cooperation in some geographic areas (i.e. towards developing countries). Opening can also represent a strategic decision related to changed relevance of a research topic in the domestic context and thus aimed at gaining or maintaining a leading edge position in the field at the EU level or in the international arena (EC, 2007; Gregersen and Johnson, 1997).

Finally, decisions of opening of national research programmes could be triggered by internationalization and Europeanization growing pressures. This being the case, opening can refer to a highly diversified set of activities (i.e. hiring of researchers, travels, visiting) besides research, or can rely on successful experiences in international collaborations, as in some ERA-NETs collaborations (EC, 2012a; EC, 2012b).

In so far we could argue that different needs and aims to be pursued at the national level (Lascombes & Le Galès, 2009), as well as different national research systems patterns, shape decisions of opening of national research programmes and might lead to very diversified patterns of opening. Finally, in the discussion, different characteristics and collaborations dynamics which characterize scientific disciplines are also taken into account (Whitley, 2000; Gregersen and Johnson, 1997; Nedeva, 2013), as well as the notion of the "search regimes" (Bonaccorsi, 2008) to frame the discussion.

Method used

The analysis is based on data collected by the JOREP project and borrows methodological approach it developed. Insights from a pilot study on three countries (Switzerland, France and Italy) are exploited focusing on major national R&D programmes. Data have been integrated with information collected from documentary analysis (mainly programmes reports, descriptive documents and calls for proposals) and through interviews with programmes' officers.

Being opening a multidimensional phenomenon, different measures and descriptors are used to characterize open programmes and to identify different levels and facets of opening. We characterize open programmes along three main dimensions. The first is a funding dimension, which includes funding to foreign researchers and research organizations, the portability of grant and the level of spending of national programmes for international collaborations. Secondly, a legal and normative dimension deals with the possibility for foreign organizations and researchers to play an official role in national R&D programmes as applicant or coordinator, excluding subcontracting practices. To that respect also time of opening emerges as an important issue. Programmes can be open to foreign collaborations since the beginning, although specific features (i.e. availability of funding, eligibility rules for foreign partners) might undergo changes during the programme's life. Differently, opening can be decided at a later stage when, for instance,

programme' objectives emerge to be better achieved through widespread collaborations or changes occur to national rules (ex. framework agreements for mutual opening of national R&D programmes, new regulations aimed at reducing complexity for managing international activities and transfer of funding). Finally a cultural dimension can be considered. This refers, at example, to availability of information concerning foreign collaborations and the widespread use of facilitators or enablers of internationalization (i.e. use of foreign languages for information exchanges, diffusion and work).

For the purpose both qualitative and quantitative descriptors developed by JOREP are used. This allows also distinguishing between a formal/legal level of opening and an effective level. The former refers to the encouragement and opportunities provided for enlargement of domestic research to foreign researchers' participation. The latter displays opening in practice, considering then the effective participation of foreign researchers to national R&D activities as partner or coordinator, with or without funding, the transfer of funding abroad, the portability of grant and the absence of criteria driving opening decision (ex. opening towards some fields only).

Results and discussion

Although the analysis is based on a quite restricted set of data, interesting insights emerge which shed light on rationales explaining different levels and degrees of opening of national research programmes.

Results from the JOREP project support the evidences that opening of national R&D programmes represents an important trend of national research policies. Several ERA countries are experiencing different forms, level and ways of opening of national programmes, despite generalized barriers and political reluctance in transferring national funds abroad. The pilot exploration clearly points out country patterns in the opening of national programmes. It shows as opening decisions are related to research activities organizations at the national level and to national traditions in international collaborations. In particular different facets of opening of national R&D programmes emerge to be related to national internationalization policies and strategies. Very few differences emerge as for the legal/normative level of opening, rather the effective level of opening is highly diversified. In the Swiss case the openness of national research system is supported by effective practices and tools (i.e portability of grants, launch of open programmes), does not emerge to be context specific rather addressing mainly basic research and consistent with the general aim of fostering the internationalization of research. France shows different level of opening of national programmes, mostly depending on the scientific sectors addressed and the strategic importance they have in the national research landscape. In so far, opening decisions are mostly shaped by research sectors concerned and internationalization strategies behind them. In the Italian case almost all large national programmes display a level, although limited, of opening mostly limited to general encouragement towards international collaborations and involvement of foreign researchers in domestic activities to reach higher quality research. However effective tools and instruments supporting opening of national programmes (i.e portability of grants) do not emerge, rather opening is blended into the general strategy for the internationalization for research.

In sum preliminary results allow arguing that opening can represent for some countries a complementary or ad hoc tool to improve internationalization, mostly related to national scientific context needs and priorities as well as to scientific fields concerned, whereas for other countries opening does not represent a specific issue of internationalization policy. Generally opening represents a different option compared to other types of international collaborations (i.e bilateral or joint activities) to be exploited when national needs and interests have to be served or protected. The open question which might emerge concerns then the possible shift, especially in national strategic scientific fields, from coordinated

international activities (i.e. joint and bilateral programmes) to nationally driven strategies through opening up of national research programmes.

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