



# ***A Multi-level Approach to Differentiated Integration***

## ***Distributive Policy, National Heterogeneity and Actors in the European Research Area***

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## **Abstract**

This paper argues that differentiated integration can be understood more thoroughly by using a multi-level approach that conceives of the nation state as an aggregate of partly autonomous subunits and actors. The participation of such components in European integration is influenced by a combination of type of policy through which integration is pursued, national heterogeneity, their loosely coupledness within national systems. By examining the case of the European Research Area, we document patterns of differentiated integration across governance levels and discuss how the following factors shape these patterns: the competitive nature of the European distributive instruments, stark variation in national and sub-national material conditions and in the governance of national research systems, as well as the normative and cognitive factors specific to the research policy sector. The conceptual and policy-based implications to the debate on European differentiated integration are discussed.

## **Keywords**

Autonomy and Control - Differentiated Integration - European Research Policy - European Union - Multi-level Approach

## Introduction

Under which conditions does differentiated integration (DI) take place in the European Union (EU)? Elements of answer to this fundamental question have been given by Leuffen, Rittberger and Schimmelfennig (2013), with reference to the varying interdependence between countries and varying degree of politicization of policies. In their views, interdependence is a variable through which states are able to calculate costs and benefits of opting in and/or out while concomitantly taking into consideration prior integration dynamics and promotion of integration by supranational actors. While intergovernmentalist and supranationalist perspectives highlight part of the conundrum related to DI, other scholars have pointed to the discrepancy between the formal aspects of opt-ins and opt-outs and their concrete enactment (see e.g. Adler-Nissen 2009).

Part of the problem derives from the focus at the state level of the existing literature on DI. As the main analytical category, member states can be seen to opt in and/or out of European Union governance arrangements of different policy sectors (i.e. vertical differentiation); while non-members are included in some common European regulatory regimes and not in others (i.e. horizontal differentiation). This idea of DI leaves the nation state 'intact' as states sign up to the same commitments and differentiation concerns the pattern of exclusion and inclusion of states. Yet a state-centric perspective neglects the inherent multi-level character of nation states. The state is a highly differentiated actor with multiple components contributing to 'a complex process involving multiple actors pursuing a wide range of individual and organizational goals, as well as pursuing the collective goals of the society' (Peters and Pierre 2009: 92). Indeed, integration processes span several interconnected levels of governance and include societal actors (Christensen and Lægveid 2006). This displays how states are not monolithic and points to how relatively autonomous actors and units that are loosely coupled within national systems can be connected at a European level, thereby challenging the internal cohesion of national systems (Egeberg 2004).

As such, DI does not just happen across states. It also happens within them and among components belonging to different states that connect to each other and/or to the European level. Similar actors within the same state can be integrated in different ways and degrees. This phenomenon, referred to as 'multi-level differentiation' (Holzinger and Schimmelfennig 2012), is largely understudied, as the literature on DI mostly focuses on the state level (however see Holzinger 2000).

In this paper we take on a multi-level approach and conceive of DI also as the actual *practices* of opt-ins and opt-outs and not only as the formal arrangements of state participation in EU policies and rules. In addition to the expected effect of interdependence and politicization, we identify institutional and normative-ideational factors that can be expected to shape patterns of DI.

To illustrate how DI plays out and to explain its patterns, we perform an analysis of the European Research Area (ERA), a policy sector whose relevance has increased substantially in the European agenda in terms of policy ambitions, scope of distributive mechanisms, as well as regards the involvement of a large number of European countries – well beyond EU members. Focusing on the case of research policy, we ask: what are the factors that shape patterns of DI in this attempt to create an integrated European area?

The choice of ERA as a case study to answer this main question is twofold. On the one hand, EU research policy is an area where commitments are uniform between states and where there are explicit shared ambitions to create a common area for the ‘free flow of knowledge’. ERA is an area where integration is not pursued through community legislation, but by incentive programmes and soft modes of governance and hence an area that can accommodate the participation of non-member states (Lavenex 2009). Thus ERA is inherently a case of external DI (Leuffen, Rittberger and Schimmelfennig 2013). On the other hand, states and national sub-units and actors, notwithstanding uniform formal commitments, vary considerably in their concrete practices of integration in ERA. Practices of DI in this area allow us to examine how the competitive nature of the European distributive instruments, the variation in national and sub-national material conditions, in the governance of national systems, as well as the sector-specific normative and cognitive elements of science and academia, shape patterns of DI.

In so doing, our paper distinguishes multi-level differentiation from Europeanization and implementation studies: Europeanization refers to how nation states, subnational components, societies and citizens take on European legal frameworks, policies, norms, values and identities (see e.g. Radaelli 2003). Implementation studies scrutinize the different impacts of and adaptations to EU policies at national and sub-national level (see e.g. Milio 2010). In the case of multi-level differentiation, we explain the patterns of integration of nation states and relevant subnational actors, that is, we examine the factors that allow/limit opt-ins and outs to a EU policy sector. Indeed the nature of European allocation mechanisms (mainly the Framework Programs and Horizon 2020) is a distinctive characteristic of the ERA: research groups and/or individual academics within universities and research organizations in national contexts compete for research funding through

highly selective processes. Hence, while ERA members and associate members comply with the same rules, equal competition among unequals shapes patterns of opting in and out. The aim of this paper is to shed light on how such inequality plays out creating DI and to explain such patterns with a multi-level approach.

The next section conceptualizes DI and formulates expectations with respect to our multi-level approach. We then analyse ERA and focus on six countries (both EU and non-EU member states). Finally we discuss our findings highlighting the relevance of DI for ERA, as well as the conceptual contributions of the paper to the debate on DI.

## **Conceptualizing differentiated integration: A multi-level perspective on integration dynamics**

The EU's polity is multi-level, since the decision-making process is shared by various actors at different levels, including sub-national ones (Marks, Hooghe and Blank 1996; Hooghe and Marks 2001; Scharpf 2002). Multi-level differentiation applies to policy areas where DI is reflected not only at the national level, but also at the European and/or sub-national levels (Holzinger 2000). As such, multi-level differentiation can take place in policies where sub-national entities (e.g. regions or cities) and/or non-state actors (i.e. NGOs or corporations) opt in/opt out with regards to specific EU institutions, instruments and policies.

Given the multi-level nature of research policy, we understand interdependence with a broader scope. According to liberal intergovernmentalism, '[a]n international constellation is characterized by interdependence, if states are unable to fulfil their security or welfare needs alone - or if it would be inefficient for them to act autonomously' (Leuffen, Rittberger and Schimmelfennig 2013: 43). An overarching definition is provided by Milner (2009: 15): '[i]nterdependence means mutual dependence, not necessarily symmetric, which brings benefits for all parties involved'. Instead we draw on the concept of complex interdependence (Keohane and Nye 1997) whereby multiple channels of action among states, transgovernmentally and transnationally, shape a multitude of linkages in the absence (or soft presence) of a hierarchy of issues on the political agenda. Complex interdependence characterizes ERA well, and resonates with the argument that autonomous national and subnational actors are able to decouple from their national systems and re-couple with the European level. We consider complex interdependence as a dimension of European integration:

hence, interdependence patterns help revealing how states and subnational actors are able to opt in and/or opt out of the ERA policies.

The level of politicization, polarization of opinions, interests or values of a functional area is a contextual feature affecting patterns of participation and interaction in European integration. Moreover, we assume that low level of political contestation in a policy area leaves more leeway for transnational integration not channelled through the central state level.

However, from an institutional perspective interdependence and politicization provide a partial understanding of the dynamics of DI. We can assume that the characteristics of European institutions and their capabilities affect their role in shaping actors' preferences as well as identities and consequently their behaviour (Egeberg 2004). In the context of DI, opt-ins are not only determined by actors' calculation of gains and losses but also by what is right and legitimate to do. State ministries, agencies and public organizations, national, regional and local entities vary in terms of how strongly they are vertically and horizontally integrated into national systems, which in turn will affect the dynamics of integration (Egeberg 2006). Agencies and public organizations, with different levels of autonomy from the coordinating/steering role of the state, have their own interests and identities supporting or constraining their involvement in the integration process. Finally, other non-state actors, such as businesses, professionals, civil associations etc. are differently linked to supranational or national institutions, and should thus be incorporated as part of the dynamics of (differentiated) integration in Europe (Fligstein 2008).

Consequently we can expect that the following factors affect the dynamics of DI in a multi-level setting:

1. *Institutional arrangements and instruments at the EU level* comprise the capacity at European level to pursue integrative agendas – this refers both to the decision-making capacity and formal legal rules constituting the basis for common European and executive capacity at the supranational level, and the extent to which they encourage involvement of state actors or non-/sub-state actors. We expect that distributive policies as opposed to integration via EU legislation will create easier access for non-members to opt in since it can more easily open up institutional venues for the participation of non-member states (Lavenex 2009).
2. *Diversity of national systems* affects patterns of inclusion to and exclusion from EU policy sectors based primarily on distributive policy. As argued by Héritier (1999: 81), in principle distributive policy implies that resources are distributed indiscriminately across regions, groups

and, in the case of the EU, across countries. Yet, even though countries and sub-national actors are given equal treatment, uneven material positions will deepen existing inequalities and consequently produce DI. In the case of ERA, we expect that a research system with a strong investment from the state will be more integrated at European level.

3. *Governance of national policy systems* shapes integration patterns depending on the form of the state, on national policy systems, on the degree of autonomy of sub-national actors. Hence, on the one hand a unitary state will usually have a unitary research system, with its components being similar – and acting similarly – across regions. On the other hand, a federal state will steer its research system in coordination with its sub-national components. Research policy will thus present regulatory measures, laws, funding priorities and actions promulgated by a central authority or by several authorities located at different levels. We thus expect patterns of DI within states to be more accentuated in decentralized research policy sectors than in unitary national systems. In a similar way, the components of a research system – universities and research organizations – will be more able to connect to the EU by successfully participating in competitive calls for research funding.
4. *Normative and cognitive elements* are particularly relevant in sectors that have strong cultural and identity-related underpinnings. Science and academia are founded on strong values and beliefs that are based on the academic profession, on disciplinary fields and on type of universities and research organizations. Additionally, academics and scientists relate to their disciplinary community, which display distinctive dynamics, e.g. natural vs. social sciences. Finally, and more recently, organizational affiliations play a role: hence a traditional comprehensive university acts differently than a polytechnic or a technological university. We thus expect that national systemic and sub-systemic cultural characteristics enable/constrain actors to engage with EU distributive policy and that these heterogeneities produce patterns of DI.

In order to examine these expectations we first identify the sector specific instruments and institutions of the EU in this policy area based on secondary analysis (see Chou and Gornitzka 2014). On the basis of specific indicators measuring the degree of inclusion in ERA, we illustrate patterns of inclusion and exclusion of states, research systems and universities in the process towards establishing the ERA, and examine DI against its distributive policy. We finally compare six national cases to probe the argument that national systemic heterogeneity affects patterns of DI and that a multi-level approach is necessary to capture DI patterns: four EU member states (Austria, Belgium, Finland and the Netherlands) and two associated countries (Norway and Switzerland).



## **Patterns of differentiated integration in ERA**

### **Institutionalizing EU distributive policy**

Ambitions for European cooperation in science and technology were visible at the very start of the European integration process (de Elera 2006). Yet the transfer of national competencies of research and development to the EU level for regulation by law was contested and integration via supranational legislation only featured marginally or indirectly. The main national research policy instruments – organization of research systems and basic funding of research institutions and universities, as well as project-based support to industrial research and development (R&D) and public research institutions – remained within the national purview. The EU approach rested within soft modes of coordination based on the principle of subsidiarity. However, concomitantly, the use of ‘the power of the supranational purse’ developed through the institutionalisation of the EU’s multiannual framework programmes (FPs) for R&D. Launched in 1984 the FPs became integrated into one ‘package’ that over the years expanded the EU thematic/sectoral reach and grew steadily in absolute terms and in their share of the European budgets (see table 1). From a fairly narrow focus on specific technological areas the FPs sub-programmes now encompass most topics of research eligible for funding. The supranational elements were also strengthened by anchoring the FPs in the Treaties, and increasingly supranational elements in the FPs’ mode of decision making were written into the EU treaties (Chou and Gornitzka 2014, p. 16).

The launch of the ERA in 2000 added to the importance of the supranational layer of governance calling for a stronger emphasis on a common EU approach to research and technology. This, it argued, was needed to address problems of fragmentation of the research system(s) in Europe that had purportedly an adverse effect on the competitiveness in European economies and research systems. The underlying rationale of ERA addressed the problem of complex interdependence of European research systems, which were seen as not sufficiently integrated and competitive. Soft modes of governance and common voluntary standards to promote integration were developed alongside the FPs for realising the ERA, such as standards for recruitment of academic personnel, policy coordination among member states to promote increasing investment in R&D. Instruments based on the principle of variable geometry (e.g. coordinating national funding agencies programmes) and intergovernmental programs were seen as part of the ERA instruments. Also some pieces of EU ‘hard law’ were introduced in ERA, particularly to attract foreign researchers to ERA. These additions were layered on to the ERA without breaking with FPs and supranational distributive policy as the

mainframe for integration in this policy area. In 2007 the European Research Council (ERC) was established as part of the FPs (from 2014 called Horizon 2020). This represented a clear break with the rest of the FPs as it embodied a distributive policy that catered only for investigator-driven research, scientific excellence, and with no concern for transnationality or immediate applicability/socio-economic relevance.

By expanding its distributive policy in the shape of the FPs, the EU has constituted itself as a research policy actor and an emerging executive centre in research policy. Executive powers have become anchored in European-level institutions acting relatively independently from already existing national executive centres (Curtin and Egeberg 2008). By shaping and implementing the programmes for R&D, the European Commission's Directorate-General (DG) Research established itself as a major funding agency. Equally DG Research assisted the development of transnational policy networks of researchers, sub-national stakeholder groups, national research councils, and industry and enterprises in dense interaction at European level, as clearly seen in the DG Research's expert groups system (Gornitzka and Sverdrup 2011). These distributive policies involve a multi-level pattern of interaction with the DG research as the node, and an area particularly prone to the 'politics of expertise' where national political leadership is less involved in everyday integration.

Consequently this sector was dominated by a sectorial logic of action and low level of politicization. Yet it was combined with 'squirts' of political interest at peak hours when budgets and overall commitment to research programs were decided (Peterson 1995). Even though EU ambitions towards a knowledge-based economy in global competition have lifted the political attention to joint research and technology efforts, the daily interaction still does not generate party political controversy and attention among the general electorate, nor sharp public controversy among EU member states (Chou 2014: 46). In national policy-making and implementation, in politics and in national civil society, this is predominantly seen as a non-politicized domain where experts and national agencies act at an arm's length from direct political steering. This seems also to have translated into the public perception of the integration in this area: in stark contrast to the attitudes among Europeans towards EU involvement in education systems, Europeans seem more than willing to confer a stronger role for research and technology policy (Eurobarometer 2010). Consequently, the counter-forces to European integration in this area do not stem from a national sensitivity attached to it among the electorate.

## Territorial expansion and opting-in patterns at state level

ERA's distributive policies have not developed at the centre stage of EU politics and have been marked by a non-politicized mode of decision making. However, the research policy sector has been highly affected by the overall development of European integration. Since distributive policies are not based on a variable geometry principle, the territorial scope of European research programs has expanded with each enlargement (see Table 1). Especially, the most recent enlargements have led to the inclusion into the ERA 'by default' of weakly developed national research systems.

Furthermore rationales of non-EU member states welcomed into ERA contain different institutionalized modes of integration characterized by soft modes and/or functional-technological logic. Soft modes enhance integration in research through distributive mechanisms, problem solving, benchmarking, ideational and normative models, while a functional-technological logic assumes that integration is instrumental to the performance, efficiency, expertise and knowledge at hand. These different rationales have allowed various non-EU members to participate in ERA.

Table 1: Evolution of membership to the Framework Programs

	<b>FP1 1984-1988</b>	<b>FP2 1987-1991</b>	<b>FP3 1990-1994</b>	<b>FP4 1994-1998</b>	<b>FP5 1998-2002</b>	<b>FP6 2002-2006</b>	<b>FP7 2007- 2013</b>
<b>FP budget (EUR million)</b>	3,750	5,396	6,600	13,215	14,960	17,883	50,521
<b>EU Members</b>	BE, DK, FR, DE, EL, IE, IT, LU, NL, UK, PT, ES			AT, FI, SE		CY, CZ, EE, HU, LV, LT, MT, PL, SK, SI	BG, RO
<b>EEA countries</b>					IC, FL, NO		
<b>Bilateral relations and ENP</b>						CH, IL	FO, MD
<b>Candidates</b>							HR*, MK, SB, TK, ME
<b>Potential candidates</b>							AL, BH
<b>Members and Associated</b>	12	12	12	15	15+3	25+5	27+14

Source: Erawatch, Innovation Report 2011, Swiss Report on FP7 (2013)

\*EU member since 2013

Table 1 reflects countries' full participation to the FPs since their inception in 1984. Expanding budgets for supranational distributive policies and

considerable territorial expansion have gone hand in hand with increasing heterogeneity of participating research systems.

The EU has built different paths towards full participation in ERA, which is granted automatically by EU membership. Indeed, this was the only possible trajectory until 1995. However, in 1999, the status of associated country (full access to the FPs without EU membership) was granted to the EEA countries. Since then, additional routes to participation have been opened up: candidate states access ERA as associated countries during the negotiations, as do potential candidates to EU membership. Access has also been given to countries that have negotiated bilateral relations with the EU and to participants in the European Neighbourhood Policy (ENP), which started with the 2004 enlargement. Although Israel is part of ENP, its (partial) participation in the FPs dates back to 1996. As the only non-European country associated to ERA, Israel has been welcomed for its traditionally strong scientific cooperation with Europe, and the intensity of its R&D.

The ERA is thus an instrument of integration which allows participation in 'equal competition' to countries that are to become EU members, have institutionalized linkages to the EU, have strong performance in science, and are at the borders of the enlarged EU. Against this backdrop Brussels refers to technical/institutional criteria (e.g. compatibility of research systems), and broader political conditions, as demonstrated by the recent (successful) negotiations to (re-) access Horizon 2020 (FP8) with Israel and Switzerland.

### **Heterogeneity of national research systems**

Historically, the integrative agenda has hit its head against the multi-level and diversified character of European research systems, and since the beginning of the 1970s it has grappled with vertical and horizontal co-ordination. Kaiser and Prange (2004: 250-251) highlight how the multi-level character of research systems varies according to policies, institutions and national coordination mechanisms, as well as in relation with the number of administrative levels involved and the degree of autonomy of subnational institutions. National diversity articulates around distinctive structures and performance of research systems, while national idiosyncrasies make integration challenging.

Variations in research systems between and within state systems are reproduced and amplified by processes of integration in research policy, a European 'Matthew effect'<sup>1</sup> characterizes the skewed distribution of resources

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<sup>1</sup> Merton (1968: 159) defines a Matthew-effect as 'the accruing of greater increments of recognition for particular scientific contributions to scientists of considerable repute and the withholding of such recognition from scientists who have not yet made their mark'.

between the European integrated advanced knowledge systems and the European disconnected knowledge systems with weak capabilities and status. Even more, the Matthew effect takes place also *within* national systems and subnational institutions, where DI divides ‘excellent Europeans’ and ‘locals’.

The most important differences among European countries<sup>2</sup> are the Gross Domestic Product (GDP) pro capita, as well investment on innovation measured by Gross domestic Expenditure on R&D (GERD) and investment on higher education measured by Higher-education expenditure on R&D as a percentage of GDP (HERD). Overall, we can distinguish three groups according to size as of inhabitants: the five big countries (Germany, the UK, France, Italy and Spain), several mid-size countries (between 5 and 30 million inhabitants) and small ones with less than 5 million inhabitants. The GDP pro capita mirrors differences between North and South, West and East, as well as older and more recent EU members. These differences resonate also in relation with GERD and HERD with distinctive exceptions (Israel).

The effects of EUs distributive policy in combination with national heterogeneity on integration in ERA are striking when measured by the allocation of funds, the level of competitiveness in the application process and the number of ERC grants. Table 2 shows that the four biggest countries have received 51.1% of FP7 funds. The following six countries score 28.6%. Thus the first ten best performing countries obtained almost 80% of available FPs funds. All in all the 15 top performers receive more than 90% total FP7 budget, leaving the remaining 26 countries with less than 10%.

Table 2 shows that when it comes to the best performing countries, the Western European states, and most of the EU15 are included with Switzerland, Israel and Norway. As of the top 20, besides Ireland and Portugal, three Central European countries are found. The remaining 21 countries, besides the above mentioned smallest ones, are the Balkan countries, the Baltic countries, Slovakia, and Moldova.

As regards competitiveness in applications, measured by funded applications to submitted applications and by the amount of funds obtained to total funds requested, the best performing countries remain practically the same.

The number of ERC grants reflects mainly these patterns, where the group of top five performers is followed by the other Western European countries, Israel, Hungary and Poland. Further 10 countries have received less than 10 ERC grants out of a total of 4034 between 2007 and 2013: Bulgaria, Croatia,

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<sup>2</sup> See Table in Appendix.

Cyprus, Czech Republic, Estonia, Latvia, Slovenia, Slovakia, Iceland and Turkey. At the bottom, there are 11 countries with no ERC grants: Albania, Bosnia Herzegovina, Faroe Islands, former Yugoslav Republic of Macedonia (FYROM), Liechtenstein, Lithuania, Luxemburg, Malta, Moldova, Montenegro, and Serbia.

Table 2: Funding, competitiveness, cooperation in the FP7

	<b>Funds allocation (% of total funding)</b>	<b>Ranking application success**</b>	<b>Ranking funding success***</b>	<b>Ranking ERC grants (06.2013)****</b>
<b>Germany</b>	16.2	7	1	2
<b>United Kingdom</b>	14.9	6	2	1
<b>France</b>	11.7	3	3	3
<b>Italy</b>	8.3	22	4	6
<b>Netherlands</b>	6.9	2	5	4
<b>Spain</b>	6.9	15	6	7
<b>Switzerland</b>	4.3	3*	7	5
<b>Belgium</b>	3.9	1	9	10
<b>Sweden</b>	3.9	4	8	9
<b>Austria</b>	2.7	12	10	11
<b>Greece</b>	2.5	25	9	16
<b>Denmark</b>	2.2	5	12	12
<b>Finland</b>	2.2	9	11	13
<b>Israel</b>	1.9	15*	13	8
<b>Norway</b>	1.7	4*	14	14
<b>Ireland</b>	1.3	8	15	15
<b>Poland</b>	1.1	19	17	19
<b>Portugal</b>	1.1	18	16	18
<b>Czech Republic</b>	0.7	16	19	21
<b>Hungary</b>	0.7	14	18	17
<b>Romania</b>	0.4	27	22	
<b>Slovenia</b>	0.4	26	21	24
<b>Turkey</b>	0.4		20	24
<b>Bulgaria</b>	0.3	24	23	21
<b>EE, CY, SK, HR, LI, RS, LT, LU, LV, MT, MK, ME, BH, MD, AL, FO</b>	< 0.3			

Source: Erawatch, Innovation Report 2011.

\*Swiss Report on FP7 (2013)

\*\*Indicates ranking of member states in relation with number of funded applications against total number of applications

\*\*\*Indicates ranking of member states in relation with funds granted against funds applied

\*\*\*\*Indicates ranking of member states in relation with number of ERC grants obtained

## **National governance systems compared: differentiated integration across and within states**

We have compared Austria, Belgium, Finland, Norway, the Netherlands, and Switzerland. The rationale for this selection is to analyse countries with significant similarities (Western European, wealthy, of medium size countries) and distinctive differences (EU and non-EU members, unitary and federal state organization). These have all participated in FP7, either as EU member states or as associated countries (Norway and Switzerland). They rank among the best performing 15 systems, however, at a closer look, they display diverse patterns of inclusion in and exclusion from ERA. Significant differences in fund distribution can be observed, ranging from the Netherlands (with almost 7 per cent) to Norway (with less than 2 per cent). As of ERC grants received, the Netherlands and Switzerland rank fourth and fifth, achieving a distribution share that is even higher than their general FP share (in 2011); while Belgium, Austria, Finland and Norway score worse in ERC grants than in general FP funding. This indicates that, notwithstanding size and GDP, universities and top researchers inside universities have different capabilities when it comes to accessing ERC grants.

The ERC grants are indicators of the extent to which universities achieve excellence in frontier research and display high variance in our sample. Digging into individual universities and research organizations there is also variation: ERC grants are spread among five Dutch and four Swiss higher education institutions, whilst Belgium, Finland and Norway have just one high achieving university, and Austria none. Noteworthy is also the difference in types of universities: in Switzerland the best results are attained by the two federal institutes of technology and the two flagship universities, in the Netherlands by one technological university and four comprehensive universities, while in Belgium, Finland and Norway, ERC grants are mainly granted to their flagship universities.

Austria, Belgium and Switzerland are federal systems where research policy responsibility is shared among different state actors at central and federal levels. Austria has been increasingly strengthening national coordination in the hands of the federal government, which distributes more than 84 per cent of public funding. Switzerland, too, has enhanced an increasingly common framework for research activities in the public sector, by bundling education, research and innovation under the roof of the ministry of economics. However, the cantons still hold full control on their universities. Belgium, too, has a decentralized national system, now organized in three separated regions (Flanders, Wallonia, Brussels-Capital), three communities (French-, Flemish- and German- speaking), and the federal state, responsible for international

space and defence research. Finland, the Netherlands and Norway have unitary state structures, which promulgate laws and regulations, as well as elaborate policies and decide on funding of research. In Finland and the Netherlands basic research and innovation are located under the roof of the ministries of education and of economics, while in Norway, similarly to Austria and Switzerland, there is a single ministry.

Table 3: Within-state differentiated integration: comparison of six top performers

	<b>FP7 distribution</b>	<b>Fund allocation ranking</b>	<b>ERC grants Oct. 2013 (tot 4'034)</b>	<b>Among Top 50 participants organizations in FP7</b>	<b>Universities with &gt;20 ERC grants (07.2013)</b>
<b>NL</b>	6.9%	5	330 8.0%	-TNO Netherlands Organisation for Applied Scientific Research -Delft University of Technology -University of Amsterdam -University of Utrecht -Radboud University Nijmegen -Eindhoven University of Technology	-University of Leiden -University of Amsterdam -Radboud University Nijmegen -Rijksuniversiteit Groningen -TU Delft
<b>CH</b>	4.3%	7	298 7.4%	-Swiss Federal Institute of Technology in Lausanne -Swiss Federal Institute of Technology Zurich -University of Zurich -University of Geneva	-Swiss Federal Institute of Technology in Lausanne -Swiss Federal Institute of Technology Zurich -University of Zurich -University of Geneva
<b>BE</b>	3.9%	8	137 3.4%	-University of Leuven -IMEC Interuniversity MicroElectronics Center	University of Leuven
<b>AT</b>	2.7%	10	100 2.5%		
<b>FI</b>	2.2%	13	64 1.6%	-VTT Technical Research Centre of Finland -University of Helsinki	University of Helsinki
<b>NO</b>	1.7%	15	41 1.0%	-SINTEF The Foundation for Scientific and Industrial Research	University of Oslo

Source: Erawatch, Innovation Report 2011, Swiss Report on FP7 (2013)

The coordination mode of research policy is an important condition explaining different patterns in federal countries. In the Nordic countries, the geographical dimension is significant, since climate conditions in the North do not encourage research-intensive infrastructures in scarcely populated areas (see e.g. Rokkan and Valen 1962). The autonomy of universities is an



additional explanatory factor, which shows that European integration is also a matter of organizational strategy. Hence some universities, particularly in Switzerland and Austria, have defined ERC grants as an overarching strategic goal in order to boost their scientific reputation. Universities' relative institutional autonomy has enhanced their capabilities to compete for FP funding against universities in more rigid regulatory frameworks.

Resonating with the findings as concerns the state level, we observe that centrally located universities, larger universities and specific types of research institutions are more likely to participate in ERA.

Finally, the divide among departments within universities in accessing European funding is explained by disciplinary fields (natural and technical sciences versus humanities and social sciences), size in terms of academic staff, students and resources, and history as high performers. This points to the well-known division between hard and soft sciences, as well as to more fine-grained differences among 'European' and 'local' universities as well as disciplinary fields.

## **Discussion**

We took as a starting point that ERA was expected to be a case of DI – do the patterns detected support this expectation? The uniform commitment to ERA and the fact that no member states have opted out from this policy would speak against this backdrop. Yet, as expected, for non-member states ERA is more inclusive, expansive and flexible than most other areas of the EU, such as the Schengen agreement or the Economic and Monetary Union, and in this sense it contributes to the overall pattern of DI. Moreover, among the instruments of ERA there are several initiatives that accommodate varying member state commitments to a common European research policy. Besides external differentiation, we find DI in the case of ERA when we see 1) DI as practice and not only as the formal commitment or opt-in to common rules and policies and 2) when we include sub-national and non-state actors in addition to the states.

What can the ERA case tell us on why and how patterns of DI occur? The patterns of inclusion and opt-ins at state level to ERA are founded on several mechanisms. One mechanism is clearly consistent with the main argument of core DI scholarship: the opt-in rationale is a functional logic that point to how the economic and R&D interdependences in Europe create a need for establishing a common area as a solution to the fragmentation and inefficiencies of national systems. This functional logic also applies to the

inclusion of non-EU members that have strong scientific systems and economies (Switzerland, Israel and Norway). These countries also can reap the benefits of opting-in on funding and collaborative opportunities that ERA offers. Such inclusion does not involve high political costs. Although the cases of Israel and Switzerland demonstrate that the EU's (threat of) exclusion from ERA can ensue from politicization of other issues in the relationship between the EU and third countries.

The interdependence argument is less equipped to account for the inclusion/opt-in when it comes to countries with weak research systems at the scientific periphery, more dependent on than interdependent with research systems of the EU. Here the spillover from other policy areas is a more relevant mechanism – the link to the Common Foreign and Security Policy as well as to the European Neighbourhood Policy shapes patterns of integration into ERA. A theoretical argument can consequently be made: the type of policy area combined with the low level of politicization (i.e. research policy as technical, academic territory, and high symbolic value of scientific diplomacy) contribute to inclusion/opt-in.

The type of policy, together with the capacities and structures established to implement them at the EU level, have shaped distinctive trajectories and variegated integration across European countries. Distributive mechanisms based on (increasingly) competitive criteria and on functional/technical rationales affect the intensity of interconnections between national and sub-national actors and EU policies and institutions. Thus, heterogeneity in terms of national wealth, willingness and/or capability to invest in R&D as well as governance structures have produced distinctive patterns of DI. Consequently, it is not heterogeneity in member states' will and preferences for European integration in this sector that have shaped DI but the capabilities of their respective research systems to de facto join a European area. Héritier's (1999: 80-81) point on the EU's R&D policies of the 1980s and 1990s is, in this respect, still valid: the equal treatment of actors in uneven material positions deepens existing inequalities. The implication for studies of DI as practice would have to take into account what types of instruments the EU deploys to pursue integrative agendas and the potential for differentiation that they carry.

In line with this, we also note that neither the increasingly supranational character of EU distributive policies in this area nor the distributive skewedness resulting from the practices and principles of FPs have politicized the EU research policy. How can this lack of contestation be accounted for? First, the overall low-level politicization of the policy sectors is a clear conditional factor – there is little to be gained from national electorate from contesting EU distributive policy in research. This allows DI to take place

despite the negative distributive implications for some member states. Second, the normative value attached to 'scientific excellence', its technical character, and norms of scientific self-governance in this area are likely to make actors at national and sub-national level accept the terms of DI making it less legitimate to 'pull the national interest card'. On the other hand, the politics of expertise argument might be overstated, as battles over the level and priorities of EU research policy have displayed divisions among losing and winning members states in EU research policy. Contestation over EU research has also been dealt with by exporting the issue to other sectors and EU instruments, compensating 'losers' from other items in the EU budget. For instance, the Europe 2020 strategy capacity building in research and innovation has become a more pronounced aspect in the regional policy instruments of the EU (Camagni and Capello 2013), where regional redistribution is legitimate and expected. There are also other instruments in the ERA policy toolbox that are more apt to accommodate national and sub-national disparities that our focus on the distributive policy does not capture. That is a source of potential bias in our analysis. Yet, the basic distributive character of EU research funding has remained a key and increasing part of the EU's overall budget and its fundamental principles have not been redesigned to accommodate concerns for more even regional/country distribution.

The EU's distributive policies have occasioned strong non-state actors (sub-national research organizations and groups) to directly interact with the DG Research as the main distributive agent at the EU level, thus underlining the multi-level character of integration in this sector. The characteristics of the state (federal versus unitary) and its steering mode (state control versus agencies' autonomy) are reflected in the organization of national research systems. In the latter, universities possess a certain degree of autonomy to define their own objectives. However, at this level, too, structural conditions frame actors' room for manoeuvre: size, type of university, political and geographical centre-periphery position, as well as public endowment are factors contributing to how far universities are able to participate in ERA. Patterns of opting-in and opting-out are conditioned by the fact that also symbolic gains accrue from joining successfully ERA, especially with the introduction of ERC. Common standards of excellence diffused by the ERC can be understood as a cultural and normative integration process. Arguably, normative and ideational factors at several levels contribute to shape patterns of DI.

However, one should ask to what extent the FPs and Horizon 2020 funding schemes are sustainable, if not substantially supported and coordinated by national policies. Commitment to ERA in the EU institutions is considerable – but the de facto practicing of this commitment at national level is significantly

lower (European Commission 2012). At the state level, we have seen that a purely functional argument for inclusion can be undermined by demands from outside the sector (Switzerland temporarily being 'blocked' from opting-in on the Horizon 2020) but also the nature of distributive policy is a volatile logic of competition and strategic action among both national and sub-national actors. This links to the temporal dimension of DI and questions linear trajectories towards permanent integration. Instead, integration patterns are also susceptible to disintegration and change (back and forth) as of intensity.

Without entering into a micro-level analysis, we argue that not only the nature of the academic enterprise is prone to such disparities, but also that the design of the main funding instruments, even more with ERC, intensifies these dynamics.

## Conclusion

The dynamics of DI in ERA support the idea that EU distributive policy without the use of hard law and without direct elements of redistribution allows relatively consensual commitment among member states and the smooth inclusion of non-members into common area building without any guarantee of *juste retour*.

In accounting for the patterns of DI interdependence and level of politicization are relevant. ERA has been launched to address fragmented yet mutually dependent national systems and this concern is clearly relevant for understanding opt-in patterns. Low politicization has made flexible inclusion of non-members into ERA possible. However we have seen that these two arguments are not sufficient to understand especially the overall and multi-level type of integration that has taken place in this case. National and sub-national heterogeneity together with the supranational character of distributive programs and the principle of 'equal distribution among unequals' create striking patterns of DI both at national and sub-system level. Norms and values of the policy sector and the scientific 'institutional sphere' have been conducive to sustain and shape this pattern (see Kölliker 2001).

All member states are fully signed up to ERA. Yet, in practice, there are still large differences in their participation. For, the determinant of their *de facto* participation is how far their individual research institutions opt-in to EU research funding programmes in practice. Whilst uniform in their formal participation in FP7, each country has ended up being internally differentiated in relation to the FPs. Within each country there is a clear divide between EU integrated research institutions and regional/local ones. Moreover, the

number of institutions on either side of the divide, and the reasons why some have ended up on one side or the other, are quite different from one country to another.

## Appendix

### Structural characteristics of national research systems\*

	Inhabitants (million)	GDP pro capita (EUR 2013)	GERD (2011)	HERD (2010 OECD)
<b>EU</b>	<b>505.7</b>	<b>25'500</b>	<b>2,06</b>	
Germany	80.5	31,300	2.92	0.51
United Kingdom	63.5	28,300	1.72	0.48
France	65.6	27,500	2.26	0.48
Italy	59.7	25,200	1.27	0.36
Netherlands	16.7	32,800	2.16	0.75
Spain	46.7	24,400	1.30	0.39
Switzerland	8.0	40,800	3.00	0.80
Belgium	11.2	30,400	2.24	0.46
Sweden	9.6	32,700	3.41	0.90
Austria	8.4	33,300	2.84	0.72
Greece (2007)	11.1	19,200	0.69	0.30
Denmark	5.6	32,100	2.99	0.90
Finland	5.4	29,100	3.55	0.79
Israel	7.8	19,800	4.40	0.58
Norway	5.0	49,900	1.66	0.55
Ireland	4.6	33,200	1.72	0.51
Poland	38.5	16,800	0.90	0.27
Portugal	10.5	19,200	1.50	0.59
Czech Republic	10.5	20,300	0.64	0.28
Hungary	9.9	16,700	1.30	0.23
Romania	20.0	12,500	0.42	0.11
Slovenia	2.1	20,900	2.80	0.29
Turkey	74.7	7,500	0.86	0.39
Bulgaria	7.3	12,100	0.64	
Estonia	1.3	18,000	2.18	0.62
Cyprus	0.9	23,500	0.47	
Slovakia	5.4	19,100	0.82	0.18
Croatia	4.3	15,600	0.75	
Iceland (2008)	0.3	28,500	2.40	0.66
Liechtenstein	0.04	90,500		
Serbia	7.2	8,900	0.96	
Lithuania	3.0	17,900	0.90	
Luxembourg	0.5	67,100	1.51	0.19
Latvia	2.2	15,900	0.66	
Malta	0.4	22,100	0.84	
FYROM	2.1	3,400	0.23	
Montenegro	0.6	9,400	1.15	
BH	3.9	6,200	0.02	
Moldova	3.6	1,500	0.41	
Albania	3.2	6,200	0.15	
Faroe Islands	0.05	32,400		

Source: (Erawatch, accessed 16.04.2014)

\*Countries are listed according to FP7 fund allocation

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