

RISIS



RESEARCH INFRASTRUCTURE FOR SCIENCE
AND INNOVATION POLICY STUDIES

THE EUROPEAN UNIVERSITY INITIATIVE FROM THE PERSPECTIVE OF DATA AND INDICATORS: EVIDENCE FROM ETER DATASET

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1. INTRODUCTION

The **RISIS ETER Dataset** has established itself as the reference point for any analysis of the **European Higher Education Area** based on microdata on individual institutions. Data fully validated at national level by the respective National Statistical Authorities are aggregated at European level following a Manual of definitions and the implementation of advanced data quality procedures.

On the basis of individual microdata it is possible to address several relevant **policy issues**. This Policy brief is devoted to a **preliminary analysis** of the recent **European University Initiative**, launched by the European Commission, Directorate-General for Education, Youth, Sport and Culture.

Higher Education Institutions have been invited to form alliances aimed at exchanging education, research, and public engagement experiences, making the mobility of students and staff a permanent and planned opportunity for everybody. Given the novelty of the policy initiative, it is too early to discuss the impact and long-term consequences. Nevertheless, it is possible to examine in a rigorous way the **differences between those HEIs** that have been selected for the creation of alliances and the remaining population.

The main questions we address are the following:

- Are the HEIs participating in the **European University Initiative** structurally different from those non-participating?
- Do they have **different size**, as measured by number of students or number of academic staff?
- Do we see differences in the **subject mix**, or the balance across disciplines?
- Do we see differences in terms of the **research orientation**, as measured by the share of PhD students out of undergraduate student population?
- Are they different in terms of degree of **internationalization** of the student population?

On the basis of detailed data on these issues, the study aims to formulate analysis and suggest some **policy implications**.

The European Tertiary Education Register (ETER) has established itself as the reference point for any analysis of higher education based on microdata, that is, on data related to individual institutions. ETER covers both university (PhD granting) and non-university institutions (e.g. Fachhochschule) on the basis of microdata validated by National Statistical Authorities across all European Union countries and several affiliated countries.

In recent years the European Commission, Directorate General Education, Youth and Culture, has launched an initiative to foster the exchange of students and academic staff in a structured and permanent way. The European University Initiative supports alliances of universities that build up joint curricula, or develop new educational programmes based on complementary resources. The Initiative is too young to evaluate its impact, but it is important to start a collective reflection on the startup period, in the light of the more general issue of the reform and relaunch of the European Higher Education Area.

The Policy Brief makes use of ETER data to compare universities that are members of alliances to non-members. The Brief finds that members of alliances are larger, more internationalized and more research intensive. At the same time they do not differ in terms of disciplinary profile.

2. METHODOLOGY AND DATA

Data is available for a variable number of HEIs, depending on the specific variable. In particular, the coverage of data is almost complete with respect to the number of undergraduate students (ISCED 5-7), while data on academic staff and on the breakdown of student population by education classes is available for a subset of HEIs.

Considering this limitation, this Policy Brief examines the differences between otherwise similar institutions with respect to the affiliation to an alliance. In particular, within the RISIS ETER dataset we select those HEIs that award the PhD as the highest degree, that is, university institutions only. The researchers are able to compare 292 universities that are members of alliances with 1024 universities that are currently non-members.

Depending on the specific variable, the researchers are obliged to compare subsets of universities, with slight changes in the total number of observations.

3. FINDINGS

Size of institutions

The ETER dataset allows the measurement of several variables approximating the notion of **size of HEIs**. The researchers make use of two variables related to the academic personnel (in Head Count, or Full Time Equivalent, respectively) and to the total number of undergraduate students, or ISCED 5-7.

The HEIs that formed **alliances** under the European University Initiative **are larger** than their counterparts not participating to alliances. Members of alliances have on average **2249 academic personnel** (counted as head count, or 1911 if counted in Full Time Equivalent) and **23081** undergraduate students. Non-members have 826 personnel (665 in FTE) and 15261 undergraduate students.

Members of alliances are then, on average, **three times larger in term of academic personnel and 50% larger in terms of students**.

What is the meaning of this large difference? It must be said that the **European University Initiative** did not place per se constraints in terms of size of the institutions.

On the one hand, it might be that the creation of alliances required a certain level of organizational effort, which is more affordable for larger institutions. On the other hand, if the ultimate goal of alliances is to offer European students a series of opportunities for education and internationalization, larger universities reach a larger pool of candidates.

Table 1. Size indicators of universities by participation in European University Initiative alliances

Variable	Universities in Alliances		Universities not in Alliances	
	Average	Number of observations	Average	Number of observations
Total academic personnel (HC)	2249	271	826	968
Total academic personnel (FTE)	1911	212	665	627
Total number of students ISCED 5-7	23.081	292	15.261	1018

Research intensity

The **ETER dataset** does not include indicators of scientific production, such as publications or citations. It however includes a carefully validated indicator of postgraduate education, defined according to the international classification of educational levels (ISCED). PhD students are registered at ISCED 8 level. The researchers examine an indicator of **research intensity** defined as the share of ISCED 8 students out of ISCED 5-7.

Table 2. PhD intensity of universities by participation in European University Initiative alliances

Variable	Universities in Alliances		Universities not in Alliances	
	Sum	Number of observations	Sum	Number of observations
Total number of students ISCED 5-7	6.762.516	276	15.536.049	1018
Total number of students ISCED 8	395.175	276	388.810	1018
PhD intensity (average)	5,80%	276	2,50%	1018

Universities participating in alliances have an average PhD intensity of 5,8%, against 2,5% for non-participating. A higher PhD intensity is correlated to a stronger orientation to research.

It is interesting to observe that **the total number of PhD students exposed to the opportunity offered by**

ces is already larger than the remaining PhD population: as many as 395.175 PhD students against 388.810. Therefore, while the Initiative is mainly devoted to the strengthening of the European Higher Education Area, its launch will immediately benefit the European Research Area, by offering to new generations of postgraduate students larger opportunities for mobility and international exchanges.

Disciplinary profile

One of the main goals of the European Higher Education Area is to **broaden opportunities for all university students**, irrespective of the disciplinary choices. What is aimed is a truly European area in which all young people can find opportunities for high level education leveraging the most advanced knowledge everywhere. Alliances combine **the best available competencies** across Europe, combining them across various dimensions (thematic, geographic, application-driven, challenge-driven).

Based on ETER data the researchers can examine the disciplinary profile by comparing **STEM disciplines** with non-STEM (Table 3). STEM is the largely adopted acronym of Science, Technology, Engineering and Mathematics. In the study is adopted a broadened definition, by adding to natural sciences and engineering the disciplines related to life sciences and medicine. In this way the researchers can divide the entire population of students into SSH (Social Sciences and Humanities) and a broad definition of STEM. More precisely the study combines together the following Field of Education (FoE) categories:

- Natural sciences, mathematics and statistics;
- Information and Communication Technologies;
- Engineering, manufacturing and construction;
- Agriculture, forestry, fisheries and veterinary;
- Health and welfare.

The researchers labels this group “extended STEM”. The remaining population results from the aggregation of

- Business, administration and law;
- Social sciences, journalism and information;
- Arts and Humanities;
- Education;
- Services,

as well as Generic programmes and qualifications.

Please note that the breakdown of student population into Fields of Education is not available for all European countries. The study therefore calculates the relevant ratio for the subset of institutions for which the data is available.

Table 3. Size indicators of universities by participation in European University Initiative alliances

Variable	Universities in Alliances		Universities not in Alliances	
	Sum	Number of observations	Sum	Number of observations
Total number of students ISCED 5-7 in extended STEM	2.892.198	276	3.154.702	704
Total number of students ISCED 5-7	6.762.516	276	7.827.792	704
Extended STEM intensity (%) (undergraduate)	42,8	276	40,3	704
Total number of students ISCED 8 in extended STEM	205.213	240	176.349	667
Total number of students ISCED 8	337.491	240	274.305	667
Extended STEM intensity (PhD)	60,8	240	64,3	667

Universities participating in alliances enrol **2.892.198 students in the extended STEM fields**, or 42,8% of the total undergraduate population. This share is 40,3% for universities not engaged into alliances.

On the other hand, universities participating in alliances support 205.213 PhD students in extended STEM fields, or 60,8% of the postgraduate population. The comparable share is 64,3% for non-alliance universities. We then conclude that **there are no significant differences in the disciplinary profile between universities participating and non participating in alliances**.

Internationalization of students

One of the goals of the **European Higher Education Area** is to make easier not only the short-term mobility (e.g. Erasmus), but also the long term mobility of students. An important measure of such mobility is given by the share of foreign students enrolled in European universities. For a foreign student to be enrolled into a university there must be a high level of foreign language proficiency, as well as the availability to live abroad. Within the ETER dataset the definition of “foreign student” refers to the difference between the country of the university and the country in which the high school diploma has been granted, independent on the current nationality of the student. Based on this definition we compare the **intensity of foreign students**, respectively at ISCED 5-7 and 8 levels, by engagement into alliances.

As in other cases, given a few missing data, it is re-calculated the intensity with comparable subsets of observations.

It appears (Table 4) that universities engaged in alliances have 11,5% of undergraduate students and 28,0% of PhD students that come from abroad, against 5,3% and 21,6% for universities not participating in alliances, respectively.

The study concludes that universities participating in alliances are remarkably more internationalized than other universities with respect to their student population at both undergraduate and postgraduate level.

Table 4. Degree of internationalization of universities by participation in European University Initiative alliances

Variable	Universities in Alliances		Universities not in Alliances	
	Sum	Number of observations	Sum	Number of observations
Total number of foreign students ISCED 5-7	734.099	260	706.790	848
Total number of students ISCED 5-7	6.378.364	260	13.367.337	848
Internationalization degree (%) (undergraduate)	11,5	260	5,3	848
Total number of foreign students ISCED 8	98.217	240	41.229	602
Total number of students ISCED 8	350.455	240	191.221	602
Internationalization degree (%) (PhD)	28	240	21,6	602

The implications of these findings depend on the policy goals. To a certain extent, it is not surprising that larger universities have been more proactive in creating alliances or in leveraging existing networks. At the same time, it is likely that existing networks are more likely based on research activities, given the long-term investment of European research policies in supporting consortia and other network organization types.

At the same time, if the goal of the European University Initiative is supporting the creation of a truly integrated Higher Education Area, it would be important to reflect on the internal dynamics of the first waves of alliance formation and expand the pool of candidates.

In the long term, it should be debated whether the European Higher Education Area and the European Research Area overlap from the point of view of individual institutions.

4. POLICY IMPLICATIONS

The researchers compare universities participating in alliances with the rest of the population of universities. They compare among them only those Higher Education Institutions granting the PhD as the highest degree, i.e. university institutions.

According to the rich ETER data available, it appears that universities participating in alliances

- are larger
- are more internationalized
- have stronger research orientation
- do not differ in the disciplinary profile

These differences are quite strong, as they are measured across comparable subsets of data and with multiple indicators.

RISIS2 - European Research Infrastructure for Science, technology and Innovation policy Studies aims at building a data and services infrastructure supporting the development of a new generation of analyses and indicators on STI fields.

To develop a deeper understanding of knowledge dynamics and policy relevant evidence, RISIS goes beyond established quantitative indicators, developing positioning indicators, in order to reduce asymmetries in actors producing new knowledge, in places where knowledge is generated, and in themes addressed.

RISIS community is dealing with sensitive issues as social innovation, non-technological innovation, the role of PhDs in society, and portfolios of public funding instruments, studying both universities and firms.

RISIS Policy Brief Series aim at disseminating key results coming from RISIS2 to improve the use of data for evidence-based policy making. The outcomes are presented through short documents pointing out the main policy issues at stake, demonstrating the contribution provided by RISIS, and what new avenues for research are now open.

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