



**MAPPING THE POPULATION, CAREERS,
MOBILITIES AND IMPACTS OF ADVANCED
DEGREE GRADUATES IN THE SOCIAL SCIENCES
AND HUMANITIES (POCARIM)**

Policy Report 6

The impact of SSH PhD graduates

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1. Background: The POCARIM Project

Between 2011 and 2014 a multinational team of academics and researchers collaborated on a research project funded by the European Commission under the Framework 7 Programme: Mapping the Population, Careers, Mobilities and Impacts of Advanced Research Degree Graduates in the Social Sciences and Humanities (POCARIM).¹

One aim of the project was to outline the main findings and some policy implications of the investigation on the impact generated by the doctoral graduates in social sciences and humanities in 13 countries.

In this policy report we present the project's key findings coming from the different activities developed within the POCARIM project dealing with PhD holders' impact. Our findings are based on original work carried out in each of the POCARIM countries and which includes: a review of the literature, policy and existing data, as well as original empirical survey and interview research. In the conclusion we draw out the implications of our findings for policymakers.

The issue of impact is at the core of the decision makers' concern in Europe. Policy makers, funding bodies, organizations' managers, and stakeholders at national and European level have shown increasing interest in evaluation methods and measurements aimed at capturing the social relevance and impact of the research funded by public resources.

This process has met with serious and yet unresolved challenges. At the core lie conceptual difficulties of the research performers themselves to identify their own impact. Several studies tried to develop indicators capable of capturing the different kinds of impact associated with different forms of research. These studies have also emphasised the importance of evaluating the impact over a time frame, facing the problems of: a) conceptual framing the impact, b) overcoming the limitations deriving from the attribution and the time lag problems.

A specific attention put on social sciences and humanities is due to the fact that they are particular fields because of their specific modes of knowledge production, and organization characteristics, which make difficult to find out and to measure impacts, either on science or on society.

The POCARIM approach went through on the one hand the capability of the PhD holders themselves to perceive their actual impact on science and society; on the other hand, the project tried to identify the range of activities that concretely represent an impact. Moreover, the identification of the range of activities outlining an impact is useful to point out the way forward building impact indicators, and to understand the determinant of the different types of impact.

The Report is based on the Deliverables of the POCARIM project (Deliverables 1 to 11), and it is organized as follow: Section 2 outlines the methods of the POCARIM project; Section 3 results coming from the different activities of the POCARIM project are presented; Section 4 discusses the policy implications and presents some policy recommendation.

¹ The countries in which the study was carried out were: France, Germany, Hungary, Italy, Latvia, Norway, Poland, Portugal, Slovakia, Spain, Switzerland, Turkey and the UK. For further details of the project see <http://www.salford.ac.uk/nmsw/research/research-projects/pocarim-home>.

2. Methods

The project consisted of two core phases. Each phase was coordinated by a key partner and carried out across the 13 countries by all partners.

Phase one of the research consisted of:

- A review of over 350 studies on the themes of: employment trends, career paths and graduate destinations; and impact, engagement and the contribution of SSH research (Gustafsson and Hansen, 2013).
- A review of policy approaches to interdisciplinarity, doctoral education as the first phase of an academic career, and responses to the economic crisis in terms of funding of doctoral education (Bitusikova, 2013).
- A review of existing statistical data sources on the population of social science and humanities researchers in the POCARIM countries and beyond (Cañibano *et al.*, 2013).

Phase two consisted of:

- An online survey of over 2,500 SSH doctoral graduates which asked a number of questions on the key themes of the project. These included the perceived impacts of respondents' work, and their international, intersectoral and interdisciplinary mobilities. Survey data was cleaned and analysed in SPSS and EXCEL (Kupiszewska *et al.*, 2013).
- In-depth, qualitative interviews with 25 respondents in each of the thirteen POCARIM countries. Each interview was transcribed, translated into English if necessary, and entered into a single NVIVO project file for analysis.

3. Evidence and Analysis

3.1 Literature review

A number of studies addressing issues connected to impact and contributions of SSH research to society agree that a narrow focus on the economic contribution of research results and on a set of measures based on indicators of intellectual property rights are problematic to capture SSH research contribution to society. Knowledge transfer has been the subject for several studies as a way to provide a better understanding of SSH research contribution to its socio-economic environment. National research assessment exercises developed for instance in UK (Research Excellence Framework-REF) and in Norway emphasised a large range of activities to be included as potentially suitable to produce an impact. Moreover, the mentioned contributions distinguished two dimensions of impact, namely academic impact and impact on society, the former related to the activities devoted to the production and transmission of knowledge, the latter related to the dissemination and transfer of knowledge.

PhDs are considered an important resource for the scientific production but also for knowledge dissemination between organisms. A close connection between the research and its valorisation should be recognized, which would require looking at the social uses of science, and organizes formal debating on it.

Studying the Spanish context, for example, the relevant factors in the knowledge transfer process have been categorized in five dimensions: transfer agents, transfer media, transfer object, transfer recipients and demand environment. Additional studies analysing the SSH have found that research groups are actually engaged with non-academic actors through a wide diversity of activities (e.g. consultancy, contract research, joint research, personnel mobility and training activities) and that factors explaining SSH engagement with society differ across activities. However, most of these relationships between SSH research groups and non-academic entities take place with entities other than firms (i.e. governmental agencies, non-profit-organizations). Moreover, there is a prevalence of informal and occasional relationships, which remain invisible to the parent organization. Overall, these studies point out that SSH research contributes to its socio-economic environment but a broad approach that considers the wide range of potential beneficiaries along with the different types of impacts that research provides (economic, social, cultural, etc.) is needed to identify this contribution.

Despite the mentioned results, the POCARIM review outlined that “in some countries there was very little literature at all, and in most countries there were few studies dealing with impact. In particular, quite a large number of studies were identified in Norway (28), the UK (30), France (40) and Germany (around 15 cited). Some countries, notably Turkey, Italy and Slovakia cited only few studies (4-6). In other countries around 8-10 studies were cited. Secondly, literature in some countries was mostly peer-reviewed and in others mostly evaluations, which may make the debate more critical in some countries than others. Thirdly, there were few evaluations of SSH, most being of all disciplines, non-SSH disciplines or specific disciplines but not SSH as a whole. Fourthly, many of the studies were based on small sample sizes due either to low response rates or because they were single case studies.”

3.2 Policy review

The review of existing policies at national level within countries participating in the POCARIM project showed that no country but United Kingdom developed efforts toward understanding and measuring the impact of social sciences and humanities. There are almost no evidence-based studies on the impact

of SSH on economy and society. This finding indicates a weakness that should be questioned and addressed.

3.3 Secondary data available

The analysis of secondary data revealed a relatively weak insight into impact measurements. Data on employment destination and mobility are available from the Career of Doctorate Holder (CDH) Project initiated by OECD (last data collection on 2009).

They partly allow to represent the magnitude of the SSH PhD holders the POCARIM project dealt with:

- A total of 809,885 research degrees were awarded in POCARIM countries in the period 2001-2010. Of these, 17.1% were awarded in SS and 9.2% in HUM.
- A total of 570,414 doctoral degrees (PhD) were awarded in POCARIM countries in the period 2004-2010. Of these, 16.9% were awarded in SS and 9.0% in HUM.
- The POCARIM project participants include the largest education systems within the EU-27. The numbers of advanced research graduates from POCARIM countries constitute approximately 80-85% of the totals for the EU-27.

Nonetheless both the coverage of the impact issue and the number of countries the CDH surveyed provided limited insights on SSH PhD holders. Some considerable national variations were evident as to the labour market outcomes. Different labour market outcomes were also observable between Humanities and the Social Sciences within a national context. The perception of whether doctoral training was related to employment was also noticeably mixed.

The secondary data examined here indicates that impact of HUM and SS doctorates in these socio-economic dimensions is also likely to vary significantly between POCARIM countries due to the different disciplinary make-up of the doctoral population being produced. The proportion of PhDs being produced in different disciplines varies considerably between POCARIM countries in the Social Sciences. The aggregated nature of the Eurostat data, into four (but three major) broad disciplinary categories, obscures much of this differentiation on national bases. This is particularly the case in relation to the Social and Behavioural Sciences (SBS) and Business and Administration (B&A) categories.

A major problem exists in terms of developing a systematic approach to understanding in which sectors of society and the economy HUM and SS PhDs are applying their knowledge and skills. In addition, there is a lack of clarity about the type of occupations that doctors are undertaking, whether they are working in research, management or other jobs. The R&D personnel data was thoroughly examined to judge its usefulness as a proxy for understanding where HUM and SS doctors are to be found. This dataset was found to be inadequate for a number of reasons, including patchy completion by country and by sector and the necessity of using R&D personnel as a proxy for the PhD trained, an assumption which will not always hold true.

3.4 Survey on SSH PhD holders

The survey addressed the population of SSH doctoral researchers graduating in thirteen POCARIM countries since 2000, and focused on their career paths, mobilities and impacts. The population covered graduates irrespective of nationality or citizenship (including nationals, other EU nationals and third country nationals). One of the issues addressed is the impact of the respondents PhDs and their subsequent work. Thus, on the one hand the survey wants to investigate how SSH PhD holders perceive

their impact at individual level, at local level and at global level; on the other hand their engagement in activities linked to academic impact and social impact was surveyed.

It proved not to be feasible to do a random sampling in all the countries under study. The reason was that in most countries it was impossible to get the complete population of SSH doctors who graduated between 2000 and 2011 because a central repository of PhD holders is not available. Therefore, purposive sampling was appropriate and the POCARIM sampling approach should be closest to heterogeneity sampling or sampling for diversity.

Hereafter we outline few results from the POCARIM Final Report that are useful to fully understand the outcomes related to the issue of impact.

The survey was accessed by 4,928 people and completed by 2,723 people. In the sample there were 47% of males and 52% of females (with the remaining 1% of respondents not replying to the question on gender).

In the POCARIM sample, 70% of respondents obtained their PhD degree in social sciences, 28% in humanities and 3% indicated that their PhD was multidisciplinary; the most important sub-discipline was economics and business (20.5% of respondents), followed by languages and literature (8.9%), sociology (8.6%) and education (8.2%). Ninety one per cent of the surveyed sample were in paid employment or had received a fellowship, and another 5% were self-employed. Thus, the unemployment level in the POCARIM sample is well below the average overall unemployment level in the EU in the recent months (12% in February 2013; Eurostat, 2012). On average, 76% of the POCARIM respondents currently work in the public sector. 18% work in the private sector and 3% in the third sector.

A vast majority of respondents, 78% average in the POCARIM countries, are employed in a higher education or research institution. The majority are employed in higher education and research in all countries, but still with quite important variations by country. In particular, higher education was dominant as an employer in Norway, Portugal and Turkey and to some extent Italy, whereas in some other countries businesses were more important, in particular France, Germany and Poland, and government administration was quite important in Switzerland.

The mentioned characteristics are summarized on Table 1; they must be taken into account when looking at the results.

Table 1. Respondents by country of current employment and type of institutions (%)

Type of institution	CH	DE	ES	FR	HU	IT	LV	NO	PL	PT	SK	TR	UK	Average
Business	7	14	7	16	6	4	6	3	11	2	10	2	8	7.4
Higher education or research organizations	70	65	78	60	74	86	77	91	70	91	83	91	76	77.8
Education	2	1	7	6	1	2	3	0	4	2	1	0	4	2.6
Government	16	8	5	6	9	4	9	5	9	3	3	4	7	6.8
NGOs	0	5	1	2	4	0	2	1	4	0	2	1	2	1.8
Other	5	8	2	10	5	3	3	1	2	1	1	3	2	3.5

Source: Elaboration based on the POCARIM Survey. See the POCARIM Final Report for the absolute numbers.

Impact perceived

SSH doctors perceive that the impact of their degrees is high on themselves and their immediate environments: on their personal satisfaction (93% of respondents indicated a beneficial or highly beneficial impact), on their career (85 %) and on the organisations they work for (83%). An average assessment of the impact for three variables related to the 'close environment' (including personal satisfaction and career) is the highest in Norway (96% of the surveyed doctors think that the impact was beneficial or highly beneficial) followed by Portugal (93%), Turkey and the UK (92%). In Slovakia and France this percentage was 80% and 79% respectively, the lowest among the POCARIM countries but still high.

The impact on the more distant world is, in the view of the respondents, much smaller. On average, 46% of SSH doctors perceive that their degree had beneficial impact on the local society, 48% see a beneficial impact on the country and 49% on the global society. The highest average of the three indicators concerning the impact on the 'more distant world' was noted in Turkey (70%) and the lowest in Slovakia (33%) and Switzerland (36%).

The most popular forms of positive impact are typically academic activities: publication of textbooks, monographs, books, articles etc. and teaching students. On average, 90% of the surveyed SSH doctors were active in these fields. On average the most active (engaging most often in one of the indicated impact activities) are doctors graduating in Norway and Portugal and least active are those obtaining their degree in France and Slovakia, with the difference exceeding 20 percentage points.

Actual impact

SSH doctors engage also quite frequently in activities, which are not typically academic (53% gave interviews in the media-radio, TV or newspapers, 37% advised policy actors on the local, regional, national or international level, and 35% participated in societal or political committees). There are some disciplinary differences in the types of the impact activities undertaken among the respondents. Those with a PhD in economics, business or law have advised policy actors and participated in policy-relevant conferences significantly more often than those with a PhD in the humanities (respectively 39% and 66% of doctors in economics and law, compared with only 20% and 46% of doctors in humanities). Surprisingly, as many as 23% of the respondents had developed innovative products, which may seem to be far from being a typical activity for somebody specialising in social sciences or humanities.

Determinants of impact

The linkages between a positive perceived impact and the activities developed have been explored in order to understand how far things done to produce impact justify the positive perception. Tables 2, 3 and 4 presents the percentages of respondents reporting to engage in activities associated with positive impact on respectively personal satisfaction, country and global society. The mentioned tables show that in all the cases there is a clear linkage between the positive perception and the actual engagement in activities that are likely to produce an impact, although they do not say anything about the causal link between the two. Thus, we know that there is a correlation between the two events although we cannot know whether the positive perception of having an impact is due to the engagement in the activities or the activities produced the understanding of a positive impact. The tables also show the different attitudes of PhD holders in different countries as to the academic or social related activities.

Table 2. Percentages of respondents reporting to engage in activities associated with positive impact on personal satisfaction

	FR (N=123)	DE (N=194)	HU (N=242)	IT (N=218)	LV (N=191)	NO (N=137)	PT (N=175)	SK (N=123)	ES (N=145)	CH (N=105)	TR (N=127)	UK (N=155)	PL (N=119)	χ^2
Academic-related activities														
Conference participation	68.9	68.5	65.6	69.5	58.8	83.8	71.2	45.1	43.3	56.7	60.2	74.0	54.9	85.6***
Teaching	86.9	83.8	89.1	88.6	90.1	93.2	95.9	90.2	95.6	82.7	96.6	85.3	83.9	39.3***
Publication	81.1	85.6	94.1	97.5	88.5	98.5	97.1	87.9	97.1	85.7	95.8	81.6	89.6	82.6***
Knowledge transfer	60.8	70.6	55.7	60.0	72.6	74.8	85.8	75.3	76.3	58.8	69.4	69.2	60.4	65.1***
Supervising students	57.7	58.4	65.6	81.2	69.2	84.6	81.7	68.8	60.7	54.6	73.3	59.2	46.7	98.4***
Managing projects	62.7	83.6	63.9	52.1	57.1	86.9	57.7	61.5	60.4	74.2	64.8	76.2	74.3	93***
Social-related activities														
Innovative products	20.0	38.3	22.9	25.9	32.9	15.5	25.2	15.1	25.2	19.6	20.4	21.8	28.3	38***
Advisor in NGO	16.3	30.2	27.1	15.5	44.9	35.9	23.3	31.2	24.4	17.5	43.3	26.9	42.1	78.8***
Board member in company	9.9	5.7	14.6	4.2	19.8	20.9	9.0	6.5	11.5	6.2	5.3	12.0	21.9	59.8***
Political committees	31.4	33.8	27.8	41.3	41.9	37.7	29.7	23.9	29.3	35.7	45.5	41.2	44.5	32.8***
Advising policy-actors	30.0	54.1	25.8	39.8	41.4	68.5	36.7	14.1	30.5	40.2	30.3	49.3	31.1	122.9***
Media-related activities														
Giving interviews	35.9	54.7	51.9	45.5	66.3	90.9	50.6	33.0	59.7	53.1	58.5	37.2	63.9	143.2***

Notes. A random sample has been drawn from the Italian sample to match sample sizes, and avoid overestimating the Italian case. In fact, the number of observation collected for Italy was much more than those of other countries (848).

Source: Elaboration based on the POCARIM Survey

Table 3. Percentages of respondents reporting to engage in activities associated with positive impact on country

	FR (N=123)	DE (N=194)	HU (N=242)	IT (N=218)	LV (N=191)	NO (N=137)	PT (N=175)	SK (N=123)	ES (N=145)	CH (N=105)	TR (N=127)	UK (N=155)	PL (N=119)	χ^2
Academic-related activities														
Conference participation	82.1	70.9	68.7	71.0	67.7	88.4	76.5	42.1	55.2	66.7	65.8	83.1	65.1	46.7***
Teaching	86.8	87.5	92.3	87.2	94.8	96.6	96.4	88.6	98.3	75.8	96.7	90.7	88.6	32.8***
Publication	94.9	87.7	97.4	97.3	88.7	98.9	95.5	90.2	98.3	78.8	98.9	87.7	93.2	44.3***
Knowledge transfer	76.3	73.8	60.7	64.4	73.4	78.8	87.9	77.5	76.3	69.7	79.5	77.8	61.9	32.6***
Supervising students	71.8	65.8	68.7	86.1	72.2	90.8	88.8	59.0	75.0	62.5	75.6	67.6	50.0	59.7***
Managing projects	83.8	85.0	68.4	52.0	59.6	86.4	63.1	57.5	72.4	75.0	68.8	78.1	75.6	52.7***
Social-related activities														
Innovative products	29.7	43.6	24.6	34.3	30.9	19.8	24.2	12.8	33.3	12.1	21.7	30.4	31.7	27.4**
Advisor in NGO	21.6	28.9	25.0	18.6	52.7	39.5	24.2	20.5	32.1	18.2	47.5	39.4	54.8	60.8***
Board member in company	18.9	9.3	14.9	4.0	19.8	25.3	9.8	7.9	12.7	6.1	7.0	17.6	17.1	31.6***
Political committees	43.2	35.5	31.0	48.0	51.1	42.0	33.3	28.2	37.9	36.4	50.6	54.8	40.5	25.8**
Advising policy-actors	47.2	53.2	31.6	44.8	47.2	72.1	40.8	10.3	41.1	45.5	38.7	62.3	45.0	65.6***
Media-related activities														
Giving interviews	55.6	59.0	54.4	47.6	72.3	92.0	53.0	32.5	74.6	63.6	65.0	52.1	75.6	79.2***

Notes. A random sample has been drawn from the Italian sample to match sample sizes. In fact, the number of observation collected for Italy was much more than those of other countries (848).

Source: Elaboration based on the POCARIM Survey

Table 4. Percentages of respondents reporting to engage in activities associated with positive impact on global society

	FR (N=123)	DE (N=194)	HU (N=242)	IT (N=218)	LV (N=191)	NO (N=137)	PT (N=175)	SK (N=123)	ES (N=145)	CH (N=105)	TR (N=127)	UK (N=155)	PL (N=119)	χ^2
Academic-related activities														
Conference participation	82.6	71.3	78.3	71.3	59.8	88.9	76.2	47.2	50.8	60.5	60.0	77.9	61	53.3***
Teaching	82.6	84.3	96.3	87.0	94.3	95.3	95.4	92.3	96.9	83.7	96.7	91.1	90.2	31.3***
Publication	89.1	88.9	99.1	97.7	92.0	100.0	96.3	86.5	96.9	81.4	97.8	90.9	95.1	42.8***
Knowledge transfer	76.7	74.2	61.2	62.7	82.6	80.3	85.7	77.8	76.9	65.1	73.5	74.7	65	32.6***
Supervising students	60.9	67.0	71.8	84.6	76.7	92.2	87.5	68.6	64.6	66.7	75.0	70.8	48.7	54.1***
Managing projects	76.7	88.8	70.8	50.8	64.0	87.5	60.8	59.5	70.3	83.7	63.4	79.5	79.5	65.8***
Social-related activities														
Innovative products	25.6	39.5	22.8	29.8	38.1	21.9	27.4	13.9	28.6	27.9	20.3	28.9	28.2	18.4
Advisor in NGO	27.3	28.6	28.4	17.7	50.0	39.1	20.0	27.8	32.3	23.3	43.2	30.2	41	41.6***
Board member in company	18.6	6.1	16.5	4.9	17.5	23.4	10.8	8.3	8.2	9.3	5.6	15.7	23.1	32.1***
Political committees	56.8	36.5	31.4	43.5	43.4	46.9	33.3	22.2	35.9	32.6	48.7	46.6	47.5	23.9*
Advising policy-actors	41.9	54.1	34.6	43.3	39.5	68.8	40.2	22.2	37.1	39.5	32.9	54.2	38.5	40.5***
Media-related activities														
Giving interviews	53.5	59.8	51.5	45.7	66.7	96.9	52.5	30.6	68.3	53.5	57.3	47.7	71.8	74.4***

Notes. A random sample has been drawn from the Italian sample to match sample sizes. In fact, the number of observation collected for Italy was much more than those of other countries (848).

Source: Elaboration based on the POCARIM Survey

Despite the fact that a positive perception of impact has a strong association with practical activities, is it possible to identify conditions that can be considered as predictors of the perceived impact? The question has been investigated using a logistic regression, which consider the PhD holders' perceptions of positive impact on their countries and on the global society as dependent variables of several circumstances that are likely to influence the possibility to generate an impact, namely: the type of working conditions (permanent position vs fix-term position; the pay condition (paid or unpaid); time spent on research; time spent on teaching, on administration and on management, the income, the periods of unemployment, collaborations (occasional or based on a regular contract), international mobility and stays, long-stays abroad.

Tables 5 shows that those who spent more time on research and on teaching, and those who have not had unemployment since completing their PhD are more likely to perceive their PhD degrees have been impactful on their country. On the contrary, circumstances generating a negative perceptions are the absence of collaboration with partners abroad, the lack of international mobility and interestingly enough a long stay abroad (longer than one year). Table 6 demonstrates that SSH PhD graduates who spent more time on research, collaborated with partners abroad, and had international stays are more likely to perceive their PhDs to be impactful on global society.

Table 5. Logistic regression analysis for predicting the probability of a beneficial impact of PhD on country

Predictors	B	Exp(B)	Wald	p
Type of contract (permanent=1, fixed= 0)	.24	1.267	5.27	.022*
Paying of position (employing organization= 1, unpaid= 0)	.52	.593	5.09	.024*
Other paid activity (yes=1, no= 0)	.07	1.076	.57	.450
Time spent on research (%)	.01	1.009	11.81	.001***
Time spent on teaching (%)	.01	1.007	8.75	.003**
Time spent on administration (%)	.00	1.001	.03	.875
Time spent on management (%)	.01	1.006	4.04	.044*
Income	.05	1.054	2.88	.089
Periods of unemployment (no=1, yes=0)	.43	1.541	12.53	.000***
Collaboration (occasionally= 1, never= 0)	.33	1.392	6.11	.013**
Collaboration (regular contacts= 1, never= 0)	.38	1.463	5.80	.016**
International mobility (regularly=1, never=0)	.36	1.434	5.94	.015**
International stays (1-3 times=1, never=0)	.31	1.364	1.98	.16
Long stays abroad (more than once=1, never=0)	-.61	.509	3.61	.057*

Notes. Dependent variable impact of PhD on your country was coded as 1= beneficial 0=not beneficial. N=2054; correctly classified 59.2%.

Exp(B) = odds ratio. Exp(B) values exceeding 1 and p values with asterisk indicate most significant predictors.

Source: Elaboration based on the POCARIM Survey

Type of contracts: Compared to SSH graduates who have fixed-term contract, those who have permanent contract in their current main job are more likely to feel their Ph.D. has been impactful on their country. **Paying position:** Compared to unpaid employees, SSH graduates who are funded by their employing organization are more likely to feel their Ph.D. has been impactful on their country. **Time spent on research:** Compared to SSH graduates who spend less time on research, SSH graduates who spend more time on research are more likely to feel their Ph.D. degree has been impactful on their country. **Time spent on teaching:** Compared to SSH graduates who spend less time on teaching, SSH graduates who spend more time on teaching are more likely to feel their Ph.D. degree has been impactful on their country. **Time spent on management:** Compared to SSH graduates who spend less time on managing projects, SSH graduates who spend more time on that are more likely to feel their Ph.D. degree has been impactful on their country. **Periods of unemployment:** Compared to SSH graduates who have had periods of unemployment, those who have not had unemployment since completing their PhD are more likely to feel their Ph.D. degree has been impactful on their country. **Collaboration:** Compared to SSH graduates who never collaborated in their work with partners abroad, SSH graduates who collaborated occasionally and have regular contacts are both more likely to feel their Ph.D. degree has been impactful on their country. **International mobility:** Compared to SSH graduates who never travelled to other countries for professional purposes, SSH graduates who regularly (1 or 2 times a year) travelled are more likely to feel their Ph.D. degree has been impactful on their country. **Long stays abroad:** Compared to SSH graduates who had not been in another country for the purpose of work for a period longer than a year, those who have moved to another country longer than a year **once** are less likely to feel their Ph.D. degree has been impactful on their country.

Table 6. Logistic regression analysis for predicting the probability of a beneficial impact of PhD on global society

Predictors	B	Exp(B)	Wald	p
Type of contract (permanent=1, fixed= 0)	.10	1.108	.99	.319
Paying of position (employing organization= 1, unpaid= 0)	-.38	.686	2.78	.095
Other paid activity (yes=1, no= 0)	-.12	.891	1.44	.231
Time spent on research (%)	.01	1.006	6.47	.011**
Time spent on teaching (%)	.01	1.005	3.55	.059*
Time spent on administration (%)	-.01	.998	.29	.589
Time spent on management (%)	.00	1.004	1.41	.236
Income	-.04	.964	1.44	.230
Periods of unemployment (no=1, yes=0)	.23	1.257	3.59	.058*
Collaboration (occasionally= 1, never= 0)	.35	1.425	7.14	.008**
Collaboration (regularly= 1, never= 0)	.67	1.944	17.8	.000***
Collaboration (always= 1, never= 0)	.51	1.660	5.82	.016**
International mobility (regularly=1, never=0)	.23	1.262	2.51	.113
International stays (once=1, never=0)	.26	1.301	4.57	.033*
Long stays abroad (more than once=1, never=0)	-.14	.864	.179	.672

Notes. Dependent variable impact of PhD on global society was coded as 1= beneficial, 0=not beneficial; N=2054; correctly classified 57.8%

Exp(B) = odds ratio. Exp(B) values exceeding 1 and p values with asterisk indicate most significant predictors.

Source: Elaboration based on the POCARIM Survey

Time spent on research: Compared to SSH graduates who spend less time on research, SSH graduates who spend more time on research are more likely to feel their Ph.D. degree has been impactful on the global society. **Time spent on teaching:** Compared to SSH graduates who spend less time on teaching, SSH graduates who spend more time on teaching are more likely to feel their Ph.D. degree has been impactful on the global society. **Periods of unemployment:** Compared to SSH graduates who have had periods of unemployment, those who have not had unemployment since completing their PhD are more likely to feel their Ph.D. degree has been impactful on the global society. **Collaboration:** Compared to SSH graduates who had never collaborated in their work with partners abroad, SSH graduates who have collaborated occasionally, regularly and always are all more likely to feel their Ph.D. degree has been impactful on the global society. **International stays:** Compared to SSH graduates who had never stayed abroad for longer periods (exceeding a month but not exceeding a year), SSH graduates who have stayed abroad once are more likely to feel their Ph.D. degree has been impactful on the global society.

Conversely, if the factors determining unemployment since completing the PhD are investigated, the strong determinants that negatively affect the possibility to be employed are staying in another country for the purpose of work for a period longer than one year, having children (no matter how many) and the partner unemployment (a sort of self-reinforcing negative result) (table 7).

3.5 Outcomes from interviews

Interviews went inside the items surveyed in order to capture more insights about seeking impact, assessing impact, the extent, the level and the timeframe of impact, as well as the type of impact produced.

Interviews confirmed some elements already observed with the survey: the different look at impact of the academic PhD holders and of PhD holders that work outside the academia as to the personal perception and the types of activities developed.

Impact is identified with a wide range of activities, all those that can contribute to the personal satisfaction or career, as well as those that can be related to changes produced in the economy and society, or saying differently all the activities that demonstrate the utility of the work done. Nonetheless, impact is something that is more likely to be discussed as a potential outcome of the PhD holders activities, than as an actual one.

It is also confirmed the propensity toward thinking about the impact in countries where the issue of impact enters more prominently the academic life by the way of evaluation (e.g. UK, NO, ES, LV, and to some extent FR), than in countries where there is not a strong commitment toward the impact assessment.

As to the differences between disciplines, these are related to the extent to which PhD holders have been involved in external activities, both if they are 'academic workers' or non-academic ones. Moreover, PhD holders with 'pure' academic roles (i.e. teaching and research) were less likely to have a clear idea of impact than those in cross-sector roles. Those in earlier career stages were less likely to be able to point to impact than those more established in their fields.

Seeking impact

The comments on impact are not the same within the doctorates interviewed. Some researchers questioned the impact agenda, although this was actually a small minority. In these cases, researchers questioned the need to try to impact on society, arguing that basic research or 'blue skies' research was perfectly acceptable as an end in itself.

To a certain extent, I think the university should be an ivory tower, where you can really develop new ideas [...] You shouldn't bother too much about impact and policy implications [...] Quite often I read a paper where they put some policy implications and I think 'why do they do it? They have no clue about how policy really works' [DE16].

Other respondents expressed the opposite view, that academic researchers should engage with the public or research should be evaluated on its impact.

I think there were tensions half a generation ago probably in terms of people were sniffy about media dons, as they were called and I think that's gone now [...] I think the idea that our research has to have impact is a good idea and I think that's changed the agenda now [UK15].

Table 7. Logistic regression analysis for predicting the probability of having periods of unemployment since completing PhD

Predictors	B	Exp(B)	Wald	p
Discipline (social sciences=1, multidisciplinary=0)	-.65	.524	4.56	.033*
Discipline (humanities=1, multidisciplinary=0)	-.41	.665	1.72	.189
International mobility (regularly=1, never=0)	-.34	.709	3.97	.046*
International mobility (often=1, never=0)	-.36	.698	3.24	.072
International stays (more 3 times=1, never=0)	.26	1.293	1.05	.306
Long stays (once=1, never=0)	1.05	2.860	28.91	.000***
Collaboration (occasionally=1, never=0)	-.62	.541	9.62	.002**
Collaboration (regularly=1, never=0)	-.58	.559	4.92	.027*
Marital status	-.30		.023	.880
Having children (one=1, no=0)	-.52	.598	11.90	.001***
Having children (two=1, no=0)	-.88	.413	31.64	.000***
Having children (more than two=1, no=0)	-1.24	.291	23.12	.000***
Partner employment (unemployed=1, in research career=0)	.78	2.176	8.02	.005**
Residence and PhD country match	-.29	.750	4.22	.040*

Note. Dependent variable having a period of unemployment was coded as 1= yes, 0=no; N=2054; correctly classified 78%

Source: Elaboration based on the POCARIM Survey

Discipline: Compared to SSH graduates of multidisciplinary, graduates of social sciences are 0.524 times less likely to have had periods of unemployment since completing their PhD. **International mobility:** Compared to SSH graduates who never travelled to other countries for professional purposes, those who regularly (1 or 2 times a year) and often travelled are less likely, respectively, to have had periods of unemployment since completing their PhD. **Long stays:** Compared to SSH graduates who had never been in another country for the purpose of work for a period longer than a year, those who have moved to another country **once** are more likely to have had periods of unemployment since completing their PhD. **Collaboration:** Compared to SSH graduates who had never collaborated in their work with partners abroad, SSH graduates who have collaborated occasionally, and regularly are less likely to have had periods of unemployment since completing their PhD. **Having children:** Compared SSH graduates who have no children, those who have one,, two and more than two are less likely to have had periods of unemployment since completing their PhD. **Partner employment:** Compared to SSH graduates who have partners in research career, those whose partners are unemployed are more likely to have had periods of unemployment since completing their PhD. **Residence and PhD match:** Compared to SSH graduates who have no match between residence country and PhD country, those who received their PhD degree from their residence country are less likely to have had periods of unemployment since completing their PhD

Even in countries as in the UK, where impact is now to be evaluated as part of the Research Excellence Framework (REF), some academics questioned this agenda in relation to humanities; in fact, the impact agenda being forced on disciplines where it is hard to make an 'immediate' impact. Despite this, researchers in these disciplines also identified areas where they could make or were making an impact.

Assessing impact

It is very hard to demonstrate impact. It is not only a matter of indicators, it is a matter of understanding whether a change effectively occurred as a consequence of your activity or not.

First of all, it takes time for impacts to emerge. The extent to which impact can be demonstrated appears also to be unpredictable and based on serendipity. Some researchers pointed out that they had discovered that their work is having an impact in some shape or form more or less by chance. For example:

Lots of [the students] were just there because they had to be there [...] And no one was really listening to what I was saying [...] but one day a student came to me at the end of the class and told me, 'I graduated yesterday and your class really marked me, and I am going to change my plan and now I am working at the NGO thanks to you' [CH12]

Academics may have inputs into the knowledge production process but cannot necessarily know what the outcome of this is. This was argued by many of the interviewees. The same applies to policy advice:

[...] was giving lectures and advice to government [...] I have been writing reports to the government [...] hopefully we have had some kind of impact, I don't always find [out] [NO10].

In some cases, researchers could demonstrate that their advice or products had been used. However, in other cases, they do not know what impact their input has had, and even if there has been an impact, it may not emerge immediately, or it could be indirect. These indirect or impacts over time are more difficult to assess than immediate impacts, but it does not necessarily mean the impact will be less.

One element emerged in the interviews: the choice of the research topic is a pre-requisite for an impact can be visible very soon. Doctorates, more often in social sciences, that concentrate the research effort on arguments that are at the core of the political debate have had more possibilities to disseminate their results to a wide audience, and to receive proofs of changes linked to the results they gained. Nonetheless, this practice cannot become a rule: doctorates especially in the humanities, outlined the need to maintain a large space of autonomy in choosing the research topic, in order both to avoid the search of short-term impact, and to maintain the possibility to get truly innovative results.

Extent level and timeframe of impact

Researchers often are modest and not over-estimate their influence, in particular when referring only to themselves, rather than their group. The extent to which they evaluate their own impact may also depend on how strong they are in selling themselves.

The vast majority of interviewees indicated that their PhD had had an important impact on their personal satisfaction and career in various ways. However, in terms of the impact of the research carried out during their PhD, this was more limited and more variable, also depending on the topic:

The topic of my thesis was very specialised, so I wouldn't say that my work has had much of an impact. Actually, what I think is that obtaining this compulsory degree has more of a prestige value – once you've got it, people look at you a bit differently, you've progressed another stop on the ladder [HU04].

In most cases, the impact of the PhD that was most emphasised by researchers related to career development and self-fulfilment. Only a few mentioned that their PhD had had an impact in terms of influencing society or policymakers. The PhD appeared to be more stepping stone that allowed researchers to develop in different directions, which may impact on their future work.

A high proportion of PhD holders saw their research as relevant and in some cases as having an impact on policy at various levels, local, regional, national or international. A smaller number saw their work as impacting mainly on their own organisation. In the latter few cases, the interviewees were usually not in academic roles.

As to the timeframe, many researchers spoke of the long timeframes in research. Some spoke of the long timeframes in research:

My PhD I think was important because it was really questioning the place of growth in the development project and [...] if we do not integrate the environment [...] we are going against the wall of ecological nightmare [...] and if it takes 20 years, and I really only think it can be done by informing and education [CH12].

Others from the humanities are more sceptical:

There is no way we directly affect the society. But literature is a sly weapon. It sticks to the unconscious mind. It is crucial in that sense [TR10].

It was argued most frequently that academic work takes a long time to have an effect, compared with work in other sectors, which can have more immediate effects. However, the point was made by a small number of researchers that changing policy can also take time.

4. Policy implications

The results of the POCARIM project have some policy implications that lead to few recommendations.

Impact is a problematic issue. The linkages between academic cultures – that can be labelled ‘the tribes’ according to the approach Becker and Trowler (2001) suggested, and disciplinary knowledge (the territories) is very different in SSH in comparison with the so called hard sciences. The internal fragmentation of the SSH, and the consequent different intellectual and organizational characteristics (Whitley, 2000) are further reasons that make externally difficult to grasp the impact on economy and society. The POCARIM results confirmed the difficulties of getting a sound conceptualization of what impact really means, outlining different perspectives that can be used when scholars investigate impact, or when decision makers (governments and funding agencies first and foremost) try to elaborate measures to assess it. In both cases the well-known problems of time lag, attribution, and unpredictability of impact itself are challenging the different attempts.

The POCARIM contribution was twofold: on the one hand the issue of individual perception/assessment of impact has been investigated in conjunction with the actual development of activities that are likely to produce an impact. A clear linkage between the two emerged in all the SSH fields and countries: the more one SSH doctorate has a positive feeling about impact in his/her country or in the global society, the more he/she effectively has developed activities suitable to produce an impact, although in most of the cases he/she is not able to know whether the impact concretely occurred. Thus, policy measures for improving the impact of doctorates in SSH shall not look at the concrete event –that only in few cases can be effectively assessed, rather at creating the opportunities for the PhD doctorates engagement in activities that might produce an impact.

On the other hand, the POCARIM project supplied evidences to understanding convergences and differentiations of the SSH with the others fields of science. The former relate to the broad range of activities developed by the doctorates in SSH, which are not so different from those developed by other doctorates, especially when they are engaged in the academic profession (research, teaching, student supervision, participations in conferences, dissemination of results, etc.). Nonetheless differentiations emerged as to: a) the type of academic outputs (more time-consuming, less propensity toward producing articles, difficult to orienting research themes toward solving socio-economic problems); b) the lower possibility of SSH of having adequate metrics for assessing the impact than other fields; c) the negative impact of log-stay abroad (more than one year); d) the weak willingness of the doctorates to seek an impact despite their concrete engagement in activities suitable to produce the impact.

Thus, the rule that ‘one size does not fit all’ is confirmed: the mentioned specific features of SSH related to the modes of knowledge production and the organizational features of this group of sciences have to be considered in policy making. Policies targeted at reinforcing particular activities (e.g. publication, teaching or media-related activities) can be reviewed to fit disciplinary needs.

Differences between the countries surveyed are also visible. The drivers of different perceptions of impact and activities developed ground both on the existence at national level of research assessment exercises carried out by governments and funding agencies looking at impact results, and the presence of a national debate within policy makers, intermediaries, stakeholders, and academics toward improving the knowledge about impact. One item that should be better explored is the effects of the different national regulations at the doctoral level on the possibility to realize an impact; the same holds

true for the different styles of tutorship, which could have an effect on creating the conditions (e.g. collaborations and networking) for an impact might occur. Beside the mentioned items, the POCARIM project testifies the lack of knowledge about the impacts of the doctorates: harmonized data are missing, monitoring of activities at European level is missing, in-depth analyses are limited to some countries, and would need a better development. From a policy point of view, it implies a weakness for the design and implementation of evidence-based policy measures.

A third key item to be considered as to the value of the investment in PhD in SSH is that teaching and research as well as collaborations (either regular or occasional) are very important for predicting the probability of a beneficial impact on global society. On the contrary periods of unemployment and the lack of collaborations are negative predictors of an impact in the country. The predictors of unemployment are the long-stay abroad and having children, whatever the number is. A clear policy implication emerges: policies aimed at sustaining employment at national level, and supplying resources for the nursing of the children can be expected to have an effect also on the impact the SSH doctorates might be able to produce.

5. Recommendations

Considering the mentioned policy implications, it is possible now to outline at least four main recommendations:

Policy implications	Recommendations
Looking only at concrete examples of impact might hide important potentialities opened but not visible yet.	Creating the opportunities for the SSH PhD students/holders being involved in a broad range of activities that are likely to produce impact, during the doctorate and just after its completion, is important to realize actual impact.
The specific features of SSH related to the modes of knowledge production and the organizational features of this group of sciences have to be considered in policy making	Improving the scholars' engagement in decision-making processes on PhD training is essential in order to take care of SSH specificities.
A negative chain emerged between unemployment, having children and stay abroad for more than one year, as predictors of less impact of doctorates in SSH.	For producing an impact in SSH fields of science, social policies at national level towards sustaining employment and families with children are more important than policies for improving the internationalization by the way of long-stay abroad.
A major shortcoming for understanding impact is the lack of comparable data, information and measures that allow to appreciating differences between European countries.	Greater disaggregation of harmonized data on SSH PhDs by discipline would be a desirable future outcome of methodological and standardisation advances across EC statistical agencies, in collaboration with Eurostat. Supplying evidences on the effects of PhD rules and tutorship in different countries might be crucial for a further implementation of the ERA.

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