Mapping the population, careers, mobilities and impacts of advanced research degree graduates in the social sciences and humanities (POCARIM)

Work Package 3: Secondary Data Analysis

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EXECUTIVE SUMMARY

- There are considerable differences between POCARIM countries in the disciplinary mix of doctorates awarded in the Social Sciences.

- Variation should therefore be expected in the ‘impact’ of Social Science PhD graduates in particular national socio-economic contexts, due to variations in the predominant types of knowledge being transferred in the different countries.

- Harmonised data are not available that break down the disciplinary mix of Humanities PhDs awarded in POCARIM countries. A comparison of national data sets is required to gain insight into this question, with the attendant limitations of diverse national statistical categories. Greater disaggregation of harmonized data on Humanities PhDs by discipline would therefore be a desirable future outcome of methodological and standardisation advances across EC statistical agencies, in collaboration with Eurostat.

- Harmonised data that provide comparisons of the disciplinary mix of Social Science lose an important degree of detail in collating these data into three major broad disciplines. Further disaggregation of harmonized data on Social Science PhDs by discipline would be a desirable future outcome of methodological and standardisation advances across EC statistical agencies, in collaboration with Eurostat.

- The ratio of Humanities and Social Science doctorates awarded to women varies quite considerably between POCARIM countries. Overall, doctoral awards to women seem to be increasing in both the Humanities and the Social Sciences. However, when these data are examined by Social Science disciplinary field and individual POCARIM, there remain a number of fields in which women are awarded only a relatively small proportion of the doctorates.

- On the basis of the harmonized and comparable data, it seems highly likely that variation exists in what might be modelled as the ‘typical’ career paths of Social Science PhD graduates in POCARIM countries, shaped by these disciplinary and gender differences. The lack of comparable disciplinary data for Humanities PhDs is a data gap with regard to this potential cross-country comparison also.

- The capacity of researchers to ‘map’, at an aggregate or population level, the typical career path and sectoral application of Doctoral knowledge and training is hampered by the lack of systematic data on the industry, sectoral and occupational locations of PhD holders. A change
to the ISCO standard of occupations to include a ‘Scientific Researcher’ category, with field of science sub-codes, would improve this situation considerably. Being able to map the evolution over time of the quantity of doctorate-trained human capital, by disciplinary field, in particular industries or sectors of the economy would be an important step toward monitoring the impact of Humanities and Social Science doctors at an aggregate level. These data could also provide comparability between countries. Among POCARIM countries, Statistics Norway has made some progress toward filling this gap by developing occupational codes for 27 different fields of research.

- Data on R&D personnel by field of science were examined in view of this major gap. These data were found to be incomplete at both country and sectoral level. These data are also collected on the basis of ISCED qualification level, however coverage is even less complete and they are not currently cross-tabulated by field of science.

- The Careers of Doctorate Holders Project, a joint initiative of the OECD, UNESCO and Eurostat, was found to have produced some useful information on destinations and labour market outcomes of Humanities and Social Science doctors. Some considerable national variation was evident in terms of 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 CDH is limited by the fact that only a small number of POCARIM countries have completed CDH data collections. There is some inconsistency between these in terms of questions asked and the timing of the collections. Nevertheless, the potential for this type of data collection to provide useful labour market and, in the planned 2013 collection, information on research and/or other outputs, is readily apparent.
1. INTRODUCTION

This Work Package involves a review of secondary data on the pipeline of PhD graduates in the Social Sciences (SS) and the Humanities (HUM). The objective in this work package is to identify and analyze harmonized information that can provide comparisons between the POCARIM countries.

This Report summarizes the data available for addressing the major objectives of the Work Package. These include:

- an analysis of existing data on the population, characteristics, labour market destinations and mobilities of doctoral graduates in SS and HUM;
- a breakdown of these data by personal /demographic characteristics such as age, gender, nationality, and whether they were engaged in full or part-time study;
- an analysis of the disciplinary mix of SS and HUM PhD graduates produced in each POCARIM country and their distribution by gender, and
- an analysis of these data that draws attention to any issues of data gaps and other problems.

The data to be analyzed is for the period 2000-2010/11 inclusive.

The major sources of data for these main tasks are:

- Eurostat education statistics (ISCED classifications);
- OECD R&D personnel by sector of employment and field of science (Frascati classifications of R&D personnel);
- OECD Careers of Doctorate Holders (CDH) survey.

These data sources have advantages and disadvantages for comparative analyses. The major advantage of the Eurostat education data is that national data have been harmonised to produce consistent and comparable categories and time-series. The major disadvantage is lack of specific disaggregated details, particularly detailed data by SS and HUM disciplines.

The OECD R&D personnel data is likewise based on a consistent collection instrument. However, the availability of data is uneven, both between countries and between sectors within specific countries.
The OECD CDH survey provides innovative data and answers some specific questions that have not been addressed systematically elsewhere. However, there is limited coverage of POCARIM countries and there are inconsistencies, both between iterations of the CDH surveys and between the years in which they were deployed in different countries.

The Report also contains sections discussing two other data sources of interest to this Report. The first of these is the Norwegian Doctoral Register and Research Personnel which can be used as the basis of Doctoral Career Analyses. The second is graduate destination surveys that can provide indications of initial labour market access by SS and HUM doctoral graduates.\(^1\)

Each table or figure in this Report shows the data source (e.g. Eurostat) and the classification system and category (eg. ISCED I6), immediately below. In the main, notes are used to annotate figures where there are country specific inconsistencies.

\(^1\) It should be noted that ongoing work within the POCARIM project will seek to utilise both case studies of graduate destination surveys and national statistical data on SS and HUM doctoral graduates for further comparative purposes where availability and cost make this possible.
2. POPULATION OF SOCIAL SCIENCE AND HUMANITIES DOCTORAL GRADUATES IN POCARIM COUNTRIES

Data on the population of social science and humanities PhD graduates is available from Eurostat. Eurostat is the agency responsible for implementing the European Community’s (EC) statistical program. It does not collect data, but relies on data supplied by national agencies. Statistics are harmonized to a single methodology, to provide maximum comparability between community members.

2.1 Social Sciences and Humanities share of POCARIM research graduates

In POCARIM countries, the social sciences (SS) and humanities (HUM) make up significant proportions of the population of graduates from advanced research degrees (F2.1).

F2.1 Advanced research degree graduates, POCARIM countries by selected major fields of education, 2001-2010

Source: Eurostat, ISCED I6.
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. In comparison, 27.5% were awarded in Science, Mathematics and Computing (SMC).

A shorter time-series of data is available for PhD graduates specifically (ISCED I6PHD). SS and HUM make up a significant proportion of doctoral graduates in POCARIM countries (F2.2).
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. In comparison, 27.6% were awarded in SMC.

2.2 POCARIM share of research graduates in the EU-27

The POCARIM project participants include the largest educations 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 (F2.3).

The total number of Humanities PhD graduates in POCARIM countries from 2004 to 2010 (n=51,305) constituted 82.8% of the total for the EU-27. The total number of Social Sciences, Business and Law PhD graduates in POCARIM countries from 2004 to 2010 (n=96,642) constituted 83.4% of the total for the EU-27. These ratios were roughly constant across the available time-series (F2.4).
F2.3  Share of advanced research degree graduates, 2004-2010

Source: Eurostat, ISCED I6.
F2.4 Number of Social Science, Business & Law and Humanities PhD graduates, POCARIM & EU-27 countries, 2004-2010

Source: Eurostat, ISCED I6PHD.

2.3 Share of POCARIM PhD graduates by major scientific field

In the period 2004-2010, the combined share of Social Sciences and Humanities (SS&H) within total PhD graduates ranged between 24.2% (Germany) and 36.1% (Hungary). The average proportion of SS&H PhDs in POCARIM countries was 29.2%, compared to an overall EU-27 share of 27.1%.

Science, Mathematics and Computing (SMC) was the leading scientific field in terms of PhD completions in all POCARIM countries for this period, with the exceptions of Latvia, Slovakia and Turkey. In Latvia and Slovakia, Engineering produced the largest number of PhDs, while in Turkey it was Social Sciences.
F2.5 Shares of PhD graduates by scientific fields POCARIM countries, 2004-2010

Source: Eurostat, ISCED I6PHD. # Available data for Poland does not disaggregate Humanities & Arts PhD graduates. The share of HUM PhDs in Poland shown in this figure was calculated by disaggregating Arts and Humanities using the average for EU-27 (ie. 25% of Humanities & Arts PhD graduates are in Arts). On this basis, N=2040 Polish Arts and Humanities PhDs are considered to be in Arts and included in the Figure in Other, with the remaining 75% of Arts and Humanities PhDs included as Humanities).

Social Sciences and Humanities thus make up a significant proportion of PhD qualifications in POCARIM countries. The socio-economic impact of these scientific fields can thus be expected to be considerable, simply based on the important contribution SS&H doctoral training makes to national stocks of highly skilled knowledge workers.

2.4 Summary: 2004-2010 PhD pipeline

The POCARIM project countries produced approximately four-fifths of all the PhDs awarded in the EU-27 for the period 2004-2010. In the HUM, 82.8% of PhDs were awarded in a POCARIM country over this period. In the SS, 83.4% of PhDs were awarded in POCARIM countries.
On average, 16.9% of the PhDs awarded in POCARIM countries were in SS and 9% were in HUM. In comparison 27.6% of PhDs awarded in POCARIM countries were in SMC:

The ratio of SS and HUM PhD graduates as a proportion of all PhDs varies between POCARIM countries. The EU-27 average was 27.1% over the period. In comparison, SS and HUM made up 24.2% of PhDs awarded in Germany over the period and 36.1% of PhDs awarded in Hungary.

Science, mathematics and computing was the largest field of PhD graduates in all POCARIM countries, with the exception of Latvia and Slovakia (Engineering) and Turkey (SS).
3. CHARACTERISTICS OF PHD GRADUATES IN SOCIAL SCIENCES AND HUMANITIES IN POCARIM COUNTRIES

This section utilises Eurostat data on the doctoral graduates only (ISCED I6PHD). The available time-series for these data is 2004-2010.

3.1 Humanities PhD graduates

A total of 61,976 Humanities PhDs graduates were produced in the EU-27 in the period 2004-2010. The largest annual cohorts of Humanities (ISCED EF22) PhDs are produced in the UK, followed by Germany and France. Numbers of Humanities PhDs appear to have increased steadily in France, Slovakia and Turkey (F3.1a&b).

F3.1a Humanities PhD graduates, POCARIM countries 2004-2010

Source: Eurostat, ISCED I6PHD. # Poland data not disaggregated from higher level category (SS&HUM).

2 This figure includes 772 Humanities PhD graduates in Italy in 2003.
There is wide variation in the institutional supply of Humanities PhDs across POCARIM countries, from close to 2000 annually in Germany and the UK to around 100 annually in smaller countries such as Norway and Portugal. Very small numbers of Humanities PhDs are currently completed in Latvia.

**F3.1b Humanities PhD graduates, selected POCARIM countries 2004-2010**

![Bar chart showing Humanities PhDs by country across years 2004-2010](chart)

Source: Eurostat, ISCED I6PHD.

Among the countries producing smaller numbers of HUM PhDs, Slovakia and Switzerland are the countries with the most sustained increase in annual cohorts across the entire period. It is noticeable that in the other countries operating at this lower rate of training, growth in the numbers of HUM PhDs has levelled off or fallen back in the most recent years of the series.

In relation to Humanities PhDs, the lack of sub-field data reduces our understanding of national diversity in the supply of disciplinary qualifications. Nevertheless, the large difference in the scale of production of these qualifications between POCARIM countries can be observed.

**3.2 Social Sciences, Business and Law (SSBL) PhD graduates**
The largest annual cohorts of Social Sciences, Business and Law PhDs are produced in Germany, followed by Germany, followed by the UK and France. Growth in the number of PhDs being produced in SS can be observed in most POCARIM countries across the period.

**F3.2 Social Sciences, Business & Law PhD graduates, POCARIM countries 2004-2010**

![Social Science PhDs POCARIM countries 2004-2010](image)

Source: Eurostat, ISCED I6PHD.

### 3.3 PhD graduates in Social Science disciplines

Social Sciences, Business and Law (ISCED EF3) is disaggregated into the four disciplinary categories: Social and Behavioural Sciences (EF31); Journalism and Information (EF32); Business and Administration (EF34); and Law (EF38).

#### 3.3.1 Social and Behavioural Sciences PhD graduates

The largest cohorts of Social and Behavioural Sciences (SBS) PhDs are produced in the UK, followed by Germany and France. Sustained growth in the number of SBS PhDs is observable in all POCARIM countries with the exception of Hungary and Norway. Relatively rapid growth in the numbers of SBS PhDs is evident in Slovakia, Switzerland, Turkey and the UK. As a proportion of all SSBL PhDs the largest cohorts of SBS PhDs are produced in Norway (70.1%), the UK (67.6%) and Portugal (63.5%). SBS PhDs make up around half of all SSBL PhDs in France,
Hungary, Italy, Latvia, Spain and Turkey. In Germany, Slovakia and Switzerland, SBS PhDs constitute approximately one-third of all SSBL PhDs.

**F3.3a Social and Behavioural Sciences PhD graduates, POCARIM countries 2004-2010**

[Graph showing the number of Social & Behavioural Science PhDs from 2004 to 2010 for various countries such as France, Germany, Hungary, Italy, Latvia, Norway, Poland #, Portugal, Slovakia, Spain, Switzerland, Turkey, and the UK.]

Source: Eurostat, ISCED I6PHD. # Poland data not disaggregated from higher level category (SSBL).
F3.3b Social and Behavioural Sciences PhD graduates, selected POCARIM countries 2004-2010

Source: Eurostat, ISCED I6PHD. # Poland data not disaggregated from higher level category (SSBL).

Among the POCARIM countries producing relatively smaller numbers of SBS PhDs (F3.3b) there has been quite rapid growth in numbers over the seven years of these data. The pronounced drop in numbers for 2010 in Hungary and Norway, coupled with the pronounced rise in numbers in Portugal, Slovakia and Switzerland for the same year, perhaps suggest that the final year of the series is likely to be revised in future data collections.

3.3.2 Journalism and Information PhD graduates

F3.4 Journalism and Information PhD graduates, POCARIM countries 2004-2010
Relatively small numbers of Journalism and Information (J&I) PhD graduates are produced in the POCARIM countries. As a proportion of national SSBL PhD graduates, the largest producers of J&I PhDs are Turkey (9.3%) and Spain (8.7%). There are no available data for several countries, including Hungary, Italy, Latvia and Norway.

3.3.3 Business and Administration PhD graduates
The largest cohort of Business and Administration PhD graduates are produced in Germany. However, the proportions of B&A PhDs among all SSBL PhD graduates are highest in Slovakia (53.6%), Switzerland (36.2%), Hungary (31.6%) and Turkey (30.9%). In contrast, B&A PhD graduates make up around 21% of all SSBL PhDs in Portugal, Spain and the UK. On this measure, the smallest proportions of B&A PhDs are produced in France (11.8%), Italy (14.6%) and Norway (16.7%) (though it should be noted that these data are incomplete in the cases of France and Italy).

3.3.4 Law PhD graduates

The largest annual cohorts of Law PhD graduates are produced in Germany, France and Italy. As a proportion of all SSBL PhDs, Germany (41.1), Italy (40.9%) and France (34.9%) are also the leading countries.
Among POCARIM countries producing smaller numbers of Law PhDs there has nevertheless been substantial and quite rapid growth in doctoral graduates (F3.7b), albeit from very small numbers in some cases.
F3.6b Law PhD graduates, selected POCARIM countries 2004-2010

Source: Eurostat, ISCED I6PHD.

3.3.5 Summary of PhD graduates in Social Science disciplines

The breakdown of the numbers of SSBL PhDs graduates by the four sub-disciplines displays significant differences between POCARIM countries (F3.7). The institutional supply of qualifications is distinctive in different national settings. This is related to both the intellectual and social organisation of sciences within Universities (PhD awarding institutions) and the arrangements that structure access to professional associations and labour markets.

For example, only a small proportion of PhDs are completed in Law in the UK compared to Germany and France. This does not necessarily reflect a smaller number of qualified Law labour market entrants emerging from universities in the UK as a PhD qualification is not a prerequisite to practice law. Whilst there are common anecdotal explanations for the emphasis on Law PhDs in France, Germany and Italy, it is beyond the scope of this Report to offer a valid explanation for these national institutional differences.
Figure F3.7 shows that the shares of SSBL PhD graduates by discipline can be divided initially into those countries for which the majority of SSBL PhDs are in SBS and those in which this is not the case. Those with an SBS majority include Norway, Portugal and the UK. Each of these three also produces more PhD graduates in B&A than in Law.

On the other hand the smallest proportions of SBS PhDs are produced in Germany, Slovakia and Switzerland. Slovakia and Switzerland are similar in that their largest disciplinary cohort is actually in the B&A field. However, Slovakia produces a relatively small percentage of Law PhDs, while Switzerland produces similar proportions of Law and SBS PhD graduates.

**F3.7 Share of PhD graduates, Social Science disciplines, POCARIM countries 2004-2010**

Source: Eurostat, ISCED I6PHD. # Poland data not disaggregated from higher level category (SSBL).

Germany, Italy and, to a lesser extent, France, have the largest emphasis on Law PhDs. France and Italy produce relatively few B&A PhD graduates and a similar proportion of SBS PhDs as Hungary, Latvia, Spain and Turkey. The disciplinary mix of SBS and B&A PhD graduates quite similar for Hungary, Latvia and Turkey, with relatively few Law PhDs.

The institutional production of doctoral qualifications in the Social Sciences can thus be seen to vary by field across POCARIM countries. This situation no doubt reflects historical factors, which
it is beyond the scope of this report to describe. Second, it probably reflects national arrangements that govern admission to professional bodies and restricted labour markets. Third, it is likely to be reflection also of the demand for particular types of knowledge depending on the characteristics of broader societal contexts.

These data lead us to two important points regarding the careers of SS doctorate holders in POCARIM countries. First, there may be variations in the ‘typical’ career paths of SS PhD graduates between countries due to the different disciplinary mixes. Second, variation must be expected in the ‘impact’ of SS PhD graduates in particular national socio-economic contexts, due to variations in the predominant types of knowledge being transferred in the different countries. These variations may be further amplified where there are differences in contexts, such as the sector of employment (Section 4), in which these disciplinary forms of knowledge are being used and applied.

A question which arises here is why the particular classification by discipline into these four groups. It seems likely this is the due to the data harmonization measures necessary for Eurostat to develop comparable data for the EC. Whilst the availability of comparable statistics is welcomed, a little more disaggregation at the disciplinary level would be a advantage.

3.4 Gender characteristics of the SSBL and HUM PhD graduates

This section focuses on the gender composition of the SSBL and HUM PhD populations in POCARIM countries. For a comprehensive overview of data on gender participation in science in the EC see European Commission (2009).

3.4.1 Humanities PhD graduates by gender
In six of the POCARIM countries women made up the majority of Humanities PhD awards for the period 2004-2010. Gender balance in Humanities PhD awards in POCARIM countries includes: a group of five countries clustered closely around the overall EU-27 figure of 51.4% women; a group of four countries somewhat above this central tier; and two countries a little below.

Latvia and Turkey appear somewhat to be outliers at either end of the figure. Latvia is based on relatively small numbers which can therefore fluctuate quickly, whereas Turkey appears to have a more significant imbalance with approximately one-third of a total of 2,610 HUM PhDs being awarded to women.
F3.9 Percentage of women Humanities PhD graduates, POCARIM countries 2004-2010 & 2010


Comparing the final year of the series (2010) to the overall ratio of HUM PhDs awarded to women suggests that the trend is toward increasing proportions of women graduates in POCARIM countries.

The exceptions in the figure are Norway, but this is based on very small numbers and is meaningless, and Turkey. The data for Turkey shows no sign of improving gender balance in the awarding of HUM PhDs.
3.4.2 Social Sciences, Business and Law PhD graduates by gender

F3.10 Social Sciences, Business and Law PhD graduates, percentage women, POCARIM countries 2004-2010


In four of the POCARIM countries women made up the majority of PhD graduates in Social Sciences, Business and Law. The percentage of SSBL PhDs awarded to women in POCARIM countries in the period shown is similar for the majority of countries, ranging between 46.0% (Italy) and 52.7% (UK). The majority of POCARIM countries are above the overall EU-27 ratio of 46.4% women doctoral graduates. Latvia once again appears as a outlier based on small numbers.

There are three POCARIM countries in which relatively smaller proportions of women earn PhDs in Social Sciences; Germany, Switzerland and Turkey. In these three countries, women made up 37% of SS doctorates for 2004-2010.

Comparing the final year of the series (2010) to the overall ratio of SS PhDs awarded to women (F3.11) suggests that the trend is toward increasing proportions of women doctoral graduates in POCARIM countries. The exceptions in the figure are Norway, but as with HUM PhDs this is based on very small numbers that are therefore potentially volatile in terms of gender balance. The
same can be said of these data in relation to Latvia. The three countries with relatively low ratios of women SS PhD graduates, Germany, Switzerland and Turkey all show higher ratios in the final year of the series than for the period overall.
F3.11 Percentage of women Social Sciences PhD graduates, POCARIM countries 2004-2010 & 2010


3.4.3 Social Sciences disciplines PhD graduates by gender

The ratio of PhDs awarded to women varies across social science disciplines. POCARIM countries also show different profiles of women’s completion of doctoral training in terms of disciplinary mix. F3.12 shows the percentage of women PhD graduates in Social & Behavioural Sciences, Business & Administration and Law disciplines (leaving aside the relatively small numbers of Journalism & Information PhDs graduates for the moment).
In terms of gender balance in specific SS disciplines, women make up the majority of PhD graduates in SBS in eight POCARIM. In addition there is gender parity on this measure in Germany and Norway and a small male majority in France. The one exception in relation to women’s completion of SBS PhDs is Turkey.

It is a different story regarding gender balance in B&A and LAW PhD completions. Only the B&A discipline in Slovakia produces a majority of women PhD graduates, with Hungary, Italy, Latvia and Spain having ratios of women PhDs in this field above 40%. In LAW, five POCARIM countries have ratios of above 40% women PhD graduates, with only Italy, Latvia and France approaching parity in terms of gender balance.

Considering gender balance across SS disciplines in the POCARIM countries a varied picture emerges. In all countries the SS discipline with the highest proportion of women PhD graduates is SBS. In the cases of France, Italy and Turkey the ratio of women PhD graduates is relatively similar across SS disciplines. However, in the remainder of countries the ratio of women PhD
graduates in B&A and LAW is much lower than in SBS. Gender ratios are similar between B&A and LAW in most countries, with the exceptions of Slovakia and Germany.

In relation to the J&I discipline, there are either small numbers of PhD graduates or absent data for most countries. Figure 3.13 illustrates the available information.

**3.4.4 Summary of gender characteristics of HUM and SSBL PhD graduates**

The available data on gender balance in HUM PhDs shows that six POCARIM countries had higher percentages of women graduates than the EU-27 average of 51.4% for the period 2004-2010. Six POCARIM countries had percentages of women HUM PhD graduates below the EU-27 average and, in all cases, below 50%.
The trend in HUM PhDs appears to be towards increasing proportions of women graduates in the vast majority of POCARIM countries.

The data on gender balance in SS PhDs shows that eight POCARIM countries had higher percentages of women graduates than the EU-27 average of 46.4% for the period 2004-2010. Five POCARIM countries had percentages of women SS PhD graduates below the EU-27 average.

Latvia, the UK, Portugal and Slovakia had proportions of women graduates with SS PhDs greater than 50%. Germany, Switzerland and Turkey have much lower rates of women SS PhD graduates, at around 37%.

The proportion of women graduating with SS PhDs appears to be increasing in POCARIM countries.

The proportion of women PhD graduates by varies markedly by SS discipline in most POCARIM countries, with the exception of France, Italy and Turkey. The SS discipline with the highest proportion of women is SBS for all POCARIM countries.

The proportion of women amongst disciplinary cohorts of SS PhDs is below 50% in the majority of cases, with the exceptions being SBS in nine POCARIM countries and B&A in Slovakia. Many disciplinary PhD graduate cohorts include less than 40% women as a total for 2004-2010.
4. WHERE IS THE IMPACT OF SOCIAL SCIENCE AND HUMANITIES PHDS BEING FELT?: Labour market destinations of SSH doctoral graduates in POCARIM countries

This section focuses on two data sources to provide a picture of where social science and humanities doctors are working in POCARIM countries. The first type of data is aggregate data regarding national R&D labour markets and educational qualifications. The second type of data is case studies of institutions that collect labour market destination surveys with their recent cohorts of PhD graduates.

4.1 R&D personnel by sector of employment and field of science

The OECD collects data on the number of full-time equivalent (FTE) researchers working in research and development (R&D). These data are available by sector of the economy and field of science. This dataset is interesting from the point of view that individuals employed as Researchers in R&D are very likely to hold doctoral qualifications (OECD 2002). The dataset can thus give broad indications about the proportion of social science and humanities doctors working in business, government, higher education and private non-profit sectors.

The limitations of these data are numerous. In terms of POCARIM countries, no data is available from the OECD for non-members countries, which include Latvia and Turkey. There is very uneven data coverage across different POCARIM countries for which data is available, including absent detail in terms of sectors or only a small number of years. The following sub-sections are organised by POCARIM countries for which there is some useful information to be derived from the dataset. This excludes France and Switzerland, in addition to the aforementioned Latvia and Turkey, from further analysis in this section.
T4.1 Data availability: FTE Researchers in R&D by Field of Science and Sector 2003-2009

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Source: OECD.stat # Not OECD member states. ## Norway data is university graduates, not FTE researchers. ### SS & HUM not disaggregated in UK data. X = no.

4.1.1 Germany

In Germany, a total of 2,001,672 (FTE) Researcher positions were devoted to R&D in the period 2003-2009. Of these, 60% were in business, 15% in government and 25% in higher education.

In the government sector, 86% of Researcher positions were in the Natural Sciences and Engineering (NS&E) for the period 2003-2009. Social Sciences (6%) and Humanities (8%) thus make up only a small fraction of the R&D workforce in this sector (F4.1).

In the higher education sector, 71% of Research positions have been in NS&E for the period 2000-2009. Social Sciences (12%) and Humanities (17%) make up between one-quarter and one-third of the Research workforce in this sector (F.4.2).

**F4.1 SS & HUM Researchers in Government, Germany 2003-2009 (FTE)**

![Graph showing Government Researchers SS & HUM, Germany 2003-2009 (FTE)](image)

Source: OECD.stat
It is evident from F4.1 that growth in employment in the government sector has been significant in HUM but very modest in SS. F4.2 shows a shallow dip for both HUM and SS in the mid-2000s but a return to growth in R&D employment in both these fields of science from around 2004-5. Overall, SS researchers have risen by around 40% comparing 2000 with 2009.

The academy has grown significantly as a destination for SS PhD graduates in recent years. In the case of HUM PhD graduates, it seems both the academy and government have both been growing destination sectors. Unfortunately no comparative data is available for the business sector in Germany.

4.1.2 Hungary

In Hungary, a total of 163,505 (FTE) Researcher positions were devoted to R&D in the period 2000-2009. Of these, 34.4% were in business, 29.2% in government and 36.4% in higher education.

Data on field of science of R&D activity is available for the business, government and higher education sectors (2000-2009).
In the business sector, 97.3% of Researcher positions were in NS&E across the period. Social Sciences (2.4%) and Humanities (0.3%) thus made up only a tiny proportion of the R&D Researcher workforce in this sector. Although the number of SS Researchers grew by around 30% in the period, the actual numbers remained relatively trivial in 2009 (n=196).

In the government sector, 68% of Researcher positions were in NS&E. Social Sciences (12%) and Humanities (18%) combined made up almost a third of the R&D workforce in this sector from 2000-2009 (F4.3).

F4.3 NS&E, SS & HUM Researchers in government, Hungary 2000-2009 (FTE)

![Graph showing NS&E, SS & HUM Researchers in government, Hungary 2000-2009 (FTE)]

Source: OECD.stat

The government sector has remained relatively static as a destination for SS and HUM Researchers, with HUM declining slightly and SS increasing slightly over the period.

In the higher education sector, 69% of Researcher positions were in NS&E. Social Sciences (12%) and Humanities (18%) combined made up almost a third of the R&D workforce in this sector from 2000-2009 (F4.4).
In Hungary, the higher education sector has grown as a destination for SS Researchers, increasing by around 50% comparing 2000 and 2009. However, higher education has declined as destination for HUM researchers; steady at a level about two-thirds that of SS.

4.1.3 Italy

In Italy, a total of 924,842 (FTE) Researcher positions were devoted to R&D in the period 2005-2009. Of these, 35.8% were in business, 17.6% in government, 42.5% in higher education and 4.1% in the private non-profit sector.


In the government sector, 87% of Researcher positions were in NS&E. Social Sciences (11%) made up a far more significant proportion of Researcher positions than did Humanities (2%) in this sector from 2003-2009 (F4.5).
As F4.5 illustrates, the government sector has not expanded as a destination for SS and HUM researchers between 2003 and 2009. In contrast, there has been substantial growth in the sector as a destination for NS&E researchers.

In the higher education sector, 63% of Researcher positions were in NS&E. Social Sciences (21%) and Humanities (16%) both made up a significant proportion of Researcher positions in this sector from 2003-2009 (F4.6).

As F4.6 illustrates, the higher sector expanded significantly as a destination for SS and HUM researchers between 2003 and 2009. As a comparison between the first and last years of the series, SS grew by 34.4% and HUM by 23.3%.
F4.6  NS&E, SS & HUM Researchers in higher education, Italy 2005-2009 (FTE)

![Graph showing Higher Education Researchers NS&E, SS & HUM, Italy 2005-2009](image)

Source: OECD.stat

F4.7  NS&E, SS & HUM Researchers in private non-profit sector, Italy 2003-2009 (FTE)

![Graph showing Private Non-profit Researchers NS&E, SS & HUM, Italy 2003-2009](image)
In the private non-profit sector, 71% of Researcher positions were in NS&E. Social Sciences (20%) and Humanities (9%) both made up a significant proportion of Researcher positions in this sector from 2003-2009 (F4.6), although the sector is a much more frequent destination for SS than for HUM researchers.

As F4.7 illustrates, there was quite rapid growth in Researcher positions in all fields of science until 2006, but particular between 2004 and 2006 in NS&E. Both SS and HUM grew in the first half of the series, until peaking in 2006 and tapering off slightly. As a comparison between the first and last years of the series, SS has grown by 57.4% although the trend since 2006 has been a steady contraction of the sector as a destination for SS researchers. HUM grew by 93.4% if we compare 2003 and 2009, although this also somewhat misleading as the trend since 2006 has been quite rapidly downward. In 2009, the number of HUM Researchers was equivalent to just 63% of the 2006 peak in the sector.

4.1.4 Norway

In Norway, a total of 161,191 (FTE) Researcher positions were devoted to R&D in the period 2003-2009. Of these, 50% were in business, 16% in government and 34% in higher education.

Data on field of science of R&D activity is available for the government and higher education sectors (2003-2009). Limited data is available for the business sector showing that almost the entire researcher workforce is in NS&E. All these data are not directly comparable with other POCARIM country data as they are not based on Researcher (FTE) occupational classification but on the numbers of university graduates. Assuming a proportion of these graduates hold PhDs it is therefore useful to also present these data with the caveat of this different basic unit. A further problem is that field of science data are only available on a bi-annual basis for most of the time series.

In the government sector, 65% of employed university graduates were from NS&E fields. Social Science graduates (30%) made up a significant proportion of employees in the sector. Government was not a significant destination for Humanities graduates (4%) from 2003-2009 (F4.8). The number of SS graduates working in government grew 27% comparing 2003 to 2009, whilst the number of HUM graduates was constant.
F4.8 NS&E, SS & HUM Researchers in government, Norway 2003-2009 (N.)

Source: OECD.stat

In the higher education sector, 65% of employed university graduates were from NS&E fields. Social Science graduates (23%) made up a significant proportion of employees in the sector. Higher education was also a significant destination for Humanities graduates (12%) from 2003-2009 (F4.9). Although growing more slowly than the employment of NS&E graduates in the sector, the number of SS graduates in higher education grew 44% comparing 2003 to 2009, whilst HUM employment also grew by 25% in the period.
F4.9 NS&E, SS & HUM Researchers in higher education, Norway 2003-2009 (N.)

In Poland, a total of 538,452 (FTE) Researcher positions were devoted to R&D in the period 2001-2009. Of these, 14.3% were in business, 21.3% in government, 64.3% in higher education and 0.1% in the private non-profit sector.

Data on field of science of R&D activity is available for the business, government, higher education and private non-profit sectors (2001-2009).

In the business sector, 99% of Researcher positions were in NS&E.

In the government sector, 90% of Researcher positions were in NS&E, with the remainder shared evenly between SS and HUM (F4.9). The FTE amount of SS and HUM Researchers in Government shows some volatility. The sector has been an increasing destination for SS Researchers in recent years, whilst the opposite is true for HUM Researchers. HUM data for 2002-2008 may be a better indicator of the presence of HUM researchers in government than the figures at either end of the period. SS FTE Researcher occupations have increased around 50% in the last two years of the series.

Source: OECD.stat

4.1.5 Poland

In Poland, a total of 538,452 (FTE) Researcher positions were devoted to R&D in the period 2001-2009. Of these, 14.3% were in business, 21.3% in government, 64.3% in higher education and 0.1% in the private non-profit sector.

Data on field of science of R&D activity is available for the business, government, higher education and private non-profit sectors (2001-2009).

In the business sector, 99% of Researcher positions were in NS&E.

In the government sector, 90% of Researcher positions were in NS&E, with the remainder shared evenly between SS and HUM (F4.9). The FTE amount of SS and HUM Researchers in Government shows some volatility. The sector has been an increasing destination for SS Researchers in recent years, whilst the opposite is true for HUM Researchers. HUM data for 2002-2008 may be a better indicator of the presence of HUM researchers in government than the figures at either end of the period. SS FTE Researcher occupations have increased around 50% in the last two years of the series.

Source: OECD.stat
In the higher education sector, 65% of Researcher FTE is devoted to NS&E, with SS making up 23% and HUM 12% (F4.10).

Source: OECD.stat
While NS&E FTE declined as a comparison between 2001 and 2009, SS and HUM grew by 60% and 26% respectively; although expansion in higher education as a destination for SS and HUM researchers has tended to come in waves followed by contractions. Nevertheless the overall trend is toward growth in this sector as an SS and HUM researcher destination.

In the private non-profit sector the number of FTE was trivial (<100) at best, and had declined to negligible levels (<20).

4.1.6 Portugal

In Portugal, a total of 252,818 (FTE) Researcher positions were devoted to R&D in the period 2000-2009. Of these, 21.9% were in business, 13.2% in government, 53.1% in higher education and 11.8% in the private non-profit sector.

Data on field of science of R&D activity is available for the business, government, higher education and private non-profit sectors (2000-2009). It should be noted however that the even years of the series are based on ‘national estimates or projections’. In addition, a break in the data
series for higher education occurred in 2008, leading to a large rise in the FTE Researchers calculated in this sector.

In the business sector, 94% of Researcher positions were in NS&E. Social Sciences (5%) made up small proportion of Researcher, whilst the Humanities field was negligible in this sector from 2000-2009. The SS component of this sector had been added largely in the last five years.

In the government sector, 81% of Researcher positions were in NS&E. Social Sciences (12.5%) made up a more significant proportion of Researcher positions than did Humanities (6%) in this sector from 2000-2009 (F4.11).

**F4.12 NS&E, SS & HUM Researchers in higher education, Portugal 2000-2009 (FTE)**

Source: OECD.stat

The government sector in Portugal has contracted as destination for researchers overall. SS FTE Researchers have declined by around 40% comparing 2009 with 2000. However, FTE HUM Researchers have actually risen in this period, particularly over the last two years. However, the government sector in Portugal has been an expanding sector for HUM researchers since 2005.
In the higher education sector, 66% of Researcher positions were in NS&E. Social Sciences (22%) and Humanities (12%) together constituted one-third of research activity in this sector from 2000-2009 (F4.12).

**F4.13 SS & HUM Researchers in higher education, Portugal 2000-2009 (FTE)**

![Graph showing FTE of SS & HUM Researchers in higher education, Portugal 2000-2009](image)

Source: OECD.stat # Break in data series.

The break in the data series for the higher education sector in 2008 renders the recent years difficult to interpret. In the period 2000-2007 FTE SS Researchers grew around 30% and FTE HUM Researchers by around 50%. The more recent data do not contradict the trend of an expanding sectoral destination for SS and HUM researchers.

The private non-profit sector is a relatively large contributor to R&D activity in Portugal, compared to the same sector in other POCARIM countries. In this sector, 82% of Researcher positions were in NS&E. Social Sciences (15%) made up a far more significant proportion of Researcher positions than did Humanities (3%) in this sector from 2000-2009. Whilst the sector expanded as a destination over the period, it remains a destination for only small absolute number of SS (approx. n=580 in 2009) and HUM (approx. n=90 in 2009) researchers.
4.1.7 Slovak Republic

In the Slovak Republic, a total of 125,176 (FTE) Researcher positions were devoted to R&D in the period 2000-2010. Of these, 17% were in business, 23% in government and 60% in higher education.

Data on field of science of R&D activity is available for the business, government, higher education and private non-profit sectors (2000-2010).

In the business sector, 96% of Researcher positions were in NS&E. Social Sciences (4%) made up the remainder of R&D activity. By the end of the series the Business sector was not a destination for either SS or HUM researchers at all.

In the government sector, 77% of Researcher positions were in NS&E. Social Sciences (16%) and Humanities (7%) made up the remainder of R&D activity over the period (F4.13).

F4.14 NS&E, SS & HUM Researchers in government, Slovak Republic 2000-2010 (FTE)

![Graph showing the trend of NS&E, SS & HUM researchers in government from 2000 to 2010](image)

Source: OECD.stat

As a destination for SS and HUM researchers the government sector in the Slovak Republic has seen a significant transformation over the period 2000-2010. The combined FTE of SS and HUM researchers...
Researchers has remained constant across the period, but has changed from being comprised of 90% SS and 10% HUM to being approximately evenly balanced between the two. As F4.13 shows, in effect the government sector has declined as a destination for SS researchers at a similar rate at which it has increased as a destination for HUM researchers. In fact, in 2010 HUM Researchers constituted 60% of the total FTE for SS and HUM combined.

The higher education sector in Slovak Republic has a similar field of science composition to the government sector, with 73% of Researcher positions in NS&E, 19% in SS and 8% in HUM. (F4.14).

**F4.15 NS&E, SS & HUM Researchers in higher education, Slovak Republic 2000-2010 (FTE)**

![Graph: Higher Education Researchers NS&E, SS & HUM, Slovak Republic 2000-2010](chart)

Source: OECD.stat

As F4.14 illustrates, the higher education sector has grown as destination as measured by FTE Researchers between 2000 and 2010. Social Science has grown steadily since 2004, approximately doubling in size on this measure. Humanities has been more of a rollercoaster but recent strong growth sees HUM FTE in 2010 reach approximately three times the size compared to 2000 (and to 2003 and 2006).

The private non-profit sector employed trivial numbers of FTE (<10).
4.1.8 Spain

In the Spain, a total of 1,046,517 (FTE) Researcher positions were devoted to R&D in the period 2000-2009. Of these, 32% were in business, 17% in government, 51% in higher education and less than half a percent in private non-profit.

Data on field of science of R&D activity is available for the government, higher education and private non-profit sectors (2000-2009).

In the government sector, 91% of Researcher positions were in NS&E. Social Sciences (5%) and Humanities (3%) made up a small part of R&D activity over the period (F4.15).

F4.16 SS & HUM Researchers in government, Spain 2000-2009 (FTE)

Source: OECD.stat

Since 2002, the government sector grew steadily as a destination for SS and HUM researchers. However, in 2006 FTE HUM Researchers bounced down and up. Nevertheless, HUM FTE grew by around 76% if the level in 2009 is compared to 2000. Over the same period, SS FTE expanded threefold.
The higher education sector in Spain has a stronger SS&H component, with 65% of Researcher positions being in NS&E, with 21% in SS and 14% in HUM. (F4.16).

**F4.17 SS & HUM Researchers in higher education, Spain 2000-2009 (FTE)**

All fields of science have expanded in the higher education sector in Spain in the period for which these data are available. The rate of growth in FTE SS Researchers has continued more strongly than for HUM Researchers. Higher education has tripled as a destination for HUM researchers and almost done so for SS researchers.

The private non-profit sector employed very small numbers of SS FTE (<100) and trivial numbers of HUM FTE (<20). The small number of SS FTE in the sector had remained relatively stable across the period.

**4.1.9 United Kingdom**

Few data are available for the UK and what was available was based on national estimates in the cases of the higher education and private non-profit sectors. In 2006, an estimated 254,009 FTE Researchers were dedicated to R&D. Of these, 37% were in business, 3.5% in government, 58% in higher education and 1.5% in the private non-profit sector.
Data on field of science of R&D activity is available for the government sector (2001-2006). However, these data are only disaggregated into two groups, NS&E and SS&H. Over this period, 90% of FTE Researchers were in NS&E and 9.6% in SS&H. The total FTE (n=989.7) indicated around one thousand SS&H researchers working in the government sector. The numbers of SS&H Researchers in government had risen as a comparison between 2001 and 2006, from 843 FTE to 990 FTE.

4.1.10 Summary

Table T4.2 summarises the available data for sectoral employment of SS and HUM Researchers by country. The table indicates simply whether a sector is expanding (+), shrinking (-) or stable (=) for SS and HUM employment, understood simply as a comparison of raw numbers between the initial years of the available data series and the final year. Sectors in which SS and HUM employment is relatively trivial are also indicated (0). Empty cells indicate that data was not available.
## T4.2 Expanding or shrinking employment destinations?

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Source: OECD.stat # Not OECD member state. ## Norway data is university graduates, not FTE researchers. ### SS & HUM not disaggregated in UK data.

The OECD R&D performance data indicates clearly that NS&E is the dominant field of science in the vast majority of sectors, with a few exceptions as noted.

Different countries have different proportions of SS & HUM researchers working in different sectors. The relative proportions of SS and HUM researchers within sectors are also quite unpredictable when different countries are compared.
These data provide a relatively weak insight into the employment destinations of SS and HUM PhDs for the reasons noted above. However, these data are collected on a systematic basis by a number of POCARIM countries for the OECD. There is therefore likely to be at least some validity in changes in sectors of employment based on medium-term trends. The relatively small numbers of SS and HUM PhDs in many sectors makes these data relatively volatile in some countries however. Overall, the usefulness of the R&D personnel by sector and field of science data collection is questionable. However, in the absence of other sources, these data at least provide some patchy indications of the dimension and trend of SS and HUM researchers working in different sectors.

4.2 Employment destination surveys

A second type of data on the employment of SSBL and HUM PhD graduates are those gathered by employment destination surveys. The availability of these data in POCARIM countries is likely to be extremely varied. There are not centralised and publicly available surveys of graduate employment destinations currently available in POCARIM countries.

An alternative approach is the compilation of a national dataset of graduate destinations based on surveys conducted at the institutional or regional level.

The POCARIM project is conducting five graduate destination survey data case studies. These case studies are being undertaken in Germany, Italy, Latvia, Turkey and the UK.

4.3 An exceptional case? Statistics Norway's detailed occupation codes

Statistics Norway code occupations at a more detailed level than ISCO with codes for 27 different fields of science. This makes it possible to identify where SS and HUM with particular disciplinary backgrounds are employed. These codes make it possible to identify those HUM and SS doctors who are utilising their training for further research or research-related activities. Observation of the change over time of research human capital in sectors and industries could thus be developed – a much needed innovation in studying the evolution of socio-economic systems.

As part of the POCARIM project selected data from Statistics Norway will be used to investigate the potential for these detailed data to build improved indicators than are currently available, through the R&D personnel survey for example.

Other data facilities in Norway, such as the Research Personnel Register, can provide further information that can further allow it to be discerned whether PhD graduates are working as
researchers or not. However, these data are less reliable when it comes to employment outside the Higher Education and Government sectors.

4.4 Summary

There is a major existing data gap in terms of the capacity to know where PhD graduates are working using comparable data. The only existing harmonized data are patchy and represent only a quite rough proxy for the destination of SS and HUM PhDs. In the definition of researcher in these data, a PhD is not requirement. However, it is likely that PhD graduates are strongly represented among SS and HUM researchers in R&D, just as they are in natural and physical sciences. In addition, not all national data is available and in many cases data is missing for one or more sectors of the economy.

Into this void, relatively ad hoc solutions such as graduate destination surveys offer the possibility of at least tracking labour market entry.

The Norwegian example suggests the potential for more detailed occupational coding, linked to regular census data collections and possibly to labour market surveys, may provide a better alternative source for data as well as a better building block for trying to construct harmonized and relatively comprehensive data across the EC.

There is increasing talk in science, education and research policy circles about impact of highly skilled human capital. It seems odd that a very basic measure of impact, such as the sector of the economy in which highly skilled PhD holders are working remains out of reach. Certainly the impact of the doctoral careers of SS and HUM PhD graduates could be better evaluated at an aggregate level if there were a broad-based set of data that could be used to identify the stock of PhDs with particular disciplinary qualifications in each sector of the economy, and the whether the trend over time in each of these sectors was positive or negative in terms of the number of these persons employed.

In the following section some examples of other types of data regarding SS and HUM PhD graduates in terms of labour market outcomes and impressions are described. These are survey-based results, with the capacity to generate more specific and subjective indicators of doctoral careers. These should not be confused with those data discussed in this section in relation to building a more comprehensive data system for understanding at an aggregate level where the impact of SS and HUM doctorate holders is being felt in the economy and society more broadly.
5. SOCIAL SCIENCE AND HUMANITIES DOCTORAL CAREERS IN POCARIM COUNTRIES: Evidence from the Careers of Doctorate Holders (CDH) project

The Careers of Doctorate Holders (CDH) project is an initiative of the OECD, with the cooperation of UNESCO and Eurostat. The core objectives were to better understand the labour market, career path and mobility of the doctoral population. A pilot data collection was conducted in 2005 in Argentina, Australia, Canada, Germany, Portugal, Switzerland and the USA. A second and larger-scale data collection was done in late 2007 with 25 participating countries. These data were then processed to focus on those who received their PhD between 1990 and 2006, improving comparability of the results. A further data collection was then conducted in 2009.

The CDH provides useful information regarding labour market outcomes and international mobility. The first major limitation of these data for POCARIM is that only a minority of POCARIM countries participated in the project. The second limitation is that not all questions were asked by all participating countries. A third limitation is that many data are not available by field or discipline, so analyses of SS and HUM specifically cannot be produced.

However, the potential for CDH type data for building indicators on careers and mobility is of interest to the POCARIM project. In this section we thus focus on those data which are available for both SS and HUM and POCARIM countries. We restrict our analysis to the most recent (2010) CDH data collection.

5.1 Labour market outcomes of SS and HUM doctors

The CDH data contains information about the employment conditions and outcomes of HUM and SS doctors for a small number of POCARIM countries (T5.1).

It is clear from these data that there is considerable variation between POCARIM countries in terms of the proportions of HUM and SS doctors who have permanent labour market contracts. Hungary and Turkey have high proportions of both HUM and SS doctors holding permanent contracts. Employment is more precarious in Germany, Latvia, Portugal and Spain.

Permanent contracting rates are similar as a comparison between HUM and SS within each country. The exception here is Germany, where SS doctorates have a higher likelihood of holding a
permanent contract than HUM doctorate holders and are also above the rate for doctors from all fields of science.

In Latvia, HUM and SS doctors have lower rates of permanent contracting than doctors in all fields overall, whilst in Hungary, Portugal, Spain and Turkey the rates for HUM and SS closely match the overall rate.

**T5.1 Employed doctorate holders, by field of study and type of contract, 2009***

<table>
<thead>
<tr>
<th>Country</th>
<th>Humanities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Permanent contract</td>
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</tr>
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</tr>
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</tr>
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<td>Spain</td>
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</tr>
<tr>
<td>Turkey</td>
<td>95.7</td>
</tr>
</tbody>
</table>
### T5.1 Employed doctorate holders, by field of study and type of contract, 2009* (cont.)

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<thead>
<tr>
<th>Country</th>
<th>Social Sciences</th>
<th>Permanent contract</th>
<th>Temporary contract</th>
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<th>Total</th>
</tr>
</thead>
<tbody>
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<td>..</td>
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</tr>
<tr>
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</table>

Source: CDH 2010, Table 8.

### T5.1 Employed doctorate holders, by field of study and type of contract, 2009* (cont.)

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</tbody>
</table>

Source: CDH 2010, Table 8.
*Data for Hungary and Spain refer to graduation years 1990 onwards.

*For Spain there is limited coverage of doctorate holders for the years 2007 to 2009.

*Data for Turkey excludes foreign citizens.

*For Spain, doctorate holders with "unspecified contracts" refer to self-employed.

T5.2 Employed doctorate holders, by field of study and labour force participation, 2009*

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<tr>
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<th>Humanities</th>
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</thead>
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</tr>
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<td>Norway</td>
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</tr>
<tr>
<td>Portugal</td>
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</tr>
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<td>Spain</td>
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<td>Turkey</td>
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T5.2 Employed doctorate holders, by field of study and labour force participation, 2009* (cont.)

<table>
<thead>
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<th></th>
<th></th>
</tr>
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<tbody>
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<tr>
<td>Latvia</td>
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<td>11.0</td>
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<td>100.0</td>
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</tr>
<tr>
<td>Norway</td>
<td>87.5</td>
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<tr>
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<td>Turkey</td>
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T5.2 Employed doctorate holders, by field of study and labour force participation, 2009*

(cont.)

<table>
<thead>
<tr>
<th></th>
<th>Full-time</th>
<th>Part-time</th>
<th>Unspecified</th>
<th>Total</th>
</tr>
</thead>
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<td>..</td>
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<tr>
<td>Hungary</td>
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<td>100.0</td>
</tr>
<tr>
<td>Latvia</td>
<td>86.1</td>
<td>13.9</td>
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</tr>
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<td>3.3</td>
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<tr>
<td>Portugal</td>
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<td>4.1</td>
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<td>100.0</td>
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<td>Turkey</td>
<td>95.1</td>
<td>4.9</td>
<td>..</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: CDH 2010, Table 9.

*Data for Hungary and Spain refer to graduation years 1990 onwards.

*For Spain there is limited coverage of doctorate holders for the years 2007 to 2009.

*Data for Turkey excludes foreign citizens.

There is also some variation in the level of labour force participation (Full-time or Part-time) of HUM and SS doctors in the CDH data for POCARIM countries (T5.2). Overall Germany and Latvia have higher rates of part-time employment among doctorate holders. In particular, Germany SS doctors and Latvian HUM doctors are more likely to be employed part-time than their counterparts in their own country, but also in comparison with the other POCARIM countries shown here. One-fifth of German SS doctors are employed part-time, well below the overall rate for doctors in the country.

Hungary, Portugal, Spain and Turkey all show high rates of full-time employment for both HUM and SS doctorate holders, consistent with the overall level for doctors in these countries. Data for
Norway show slightly lower rates, but this may be due to the small proportion of unspecified results for this question.

### T5.3 Employed doctorate holders, by field of study and occupation, 2009*

<table>
<thead>
<tr>
<th>Country</th>
<th>Humanities</th>
<th>Other</th>
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<tbody>
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<td>Managers</td>
<td>Professionals</td>
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<td>89.0</td>
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<td>Norway</td>
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</tr>
<tr>
<td>Turkey</td>
<td>3.9</td>
<td>95.5</td>
</tr>
</tbody>
</table>
### T5.3 Employed doctorate holders, by field of study and occupation, 2009 (cont.)

#### Social Sciences

<table>
<thead>
<tr>
<th>Country</th>
<th>Managers</th>
<th>Professionals</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ISCO classes</td>
</tr>
<tr>
<td>Hungary</td>
<td>14.4</td>
<td>82.3</td>
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<td>Norway</td>
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<td>3.3</td>
<td>92.8</td>
<td>3.9</td>
</tr>
<tr>
<td>Spain</td>
<td>3.6</td>
<td>95.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Turkey</td>
<td>7.3</td>
<td>91.9</td>
<td>0.8</td>
</tr>
</tbody>
</table>

#### All Fields

<table>
<thead>
<tr>
<th>Country</th>
<th>Managers</th>
<th>Professionals</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ISCO classes</td>
</tr>
<tr>
<td>Hungary</td>
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<td>88.6</td>
<td>1.9</td>
</tr>
<tr>
<td>Latvia</td>
<td>17.2</td>
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<td>3.0</td>
</tr>
<tr>
<td>Norway</td>
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<td>2.7</td>
</tr>
<tr>
<td>Turkey</td>
<td>4.4</td>
<td>94.8</td>
<td>0.7</td>
</tr>
</tbody>
</table>
Source: CDH 2010, Table 10.

*Data for Hungary and Spain refer to graduation years 1990 onwards.

*For Spain there is limited coverage of doctorate holders for the years 2007 to 2009.

*Data for Turkey excludes foreign citizens.

The CDH provides a particularly interesting insight into the occupations held by HUM and SS doctorate holders (T5.3). It is evident from these data that the vast majority of PhD graduates are working in management or professional occupations.

Among POCARIM countries for which these data are available, it is clear that HUM and SS doctorates work almost exclusively in professional occupation in Portugal, Spain and Turkey, and at a slightly lower rate in Norway. However, in Hungary and Latvia there are high proportions of SS and HUM doctors who are in managerial occupations.

Almost one in five SS and HUM doctors in Latvia are in a management occupation. In Hungary, both HUM and SS doctors are more likely to be in management occupations than doctors as a whole in the country.
### T5.4 Employed doctorate holders' perception of job relation to their doctoral degree, by field of study, 2009*

<table>
<thead>
<tr>
<th>Country</th>
<th>Reference year</th>
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<th>Humanities Partly related</th>
<th>Humanities Not related</th>
<th>Social Sciences Related</th>
<th>Social Sciences Partly related</th>
<th>Social Sciences Not related</th>
<th>All Fields Related</th>
<th>All Fields Partly related</th>
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</thead>
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<td>80.8</td>
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<td>4.6</td>
</tr>
<tr>
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</tr>
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<tr>
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<td>3.8</td>
</tr>
</tbody>
</table>

Source: CDH 2010, Table 26.

*Data for Hungary and Spain refer to graduation years 1990 onwards.

*For Poland, one or more individuals may have multiple doctoral degrees.

*For Spain, there is limited coverage of doctorate holders for the years 2007 to 2009.

*Data for Turkey excludes foreign citizens.

An interesting variable within the CDH data collection is the perception of the relation between doctoral training and current job among doctorate holders.

Looking first at the perception of doctorate holders overall, it is clear that Latvian, Portuguese and Spanish PhDs feel there is less relation between their degree and their job than the other POCARIM countries included in this variable. Interestingly, quite substantial proportions of PhDs perceive that their doctoral training is not related to their job at all in Latvia and Spain. In Portugal there is a strong perception that doctoral training is at least partly related to the job. In contrast, in Hungary, Poland and Turkey there is a strong perception that doctoral training relates to the job, at least partly, and very low rates find their doctorate and their job to not be related.
Among HUM doctorates, perceptions are very closely aligned to the perceptions overall in each country. Among SS doctorates, the perception of a lack of relation between training and the job in Latvia and Spain is much less pronounced, suggesting SS training in these countries is less disconnected from work than is common in other fields including HUM.

Comparing the HUM and SS fields, the results are quite similar in each of the POCARIM countries. The only noticeable difference is that SS PhDs in Poland, Portugal and Spain are considerably more likely to feel their doctoral training is related to their job than their HUM counterparts.

The substantive rates of perceived relation between doctoral training and employment need to be treated with considerable caution. However, these data suggest that, even in those countries where the relation is considered to exist, there is room for improving these results.

As an indicator of the impact of doctoral careers these data suggest that the value of training is significant, but more so in some POCARIM countries than others and always with an margin for either better exploiting training in work. Developing an understanding of precisely what components of training are perceived to relate well to the job is not possible with the current data available in CDH.

5.2 Summary

The CDH project provides some interesting insights into the employment role and labour market relations of HUM and SS doctors. It also provides interesting data on the perception of doctorate holders of the suitability of their PhD training for their work. The lack of coverage of POCARIM countries limits the comparative potential of the CDH data, as does the inconsistency in the questions asked in different countries – which further reduces the number of available country comparisons.

The CDH data also contains other useful information that is not disaggregated by discipline. For example, data on the rate of stays abroad, the destinations of stays abroad, the cumulative length of time spent abroad and the reasons for returning to the home country are all collected in CDH but are not publicly available by discipline of doctoral training.

Despite these strong limitations, the potential of a data system such as CDH to provide useful indicators on HUM and SS doctoral careers is apparent. The practical difficulties involved in the
CDH methodology in terms of harmonisation of data collection, perhaps means that the future viability of such a difficult data project is restricted. However, the proposed data instrument for a 2013 collection shows the benefit of the lessons learned in the previous trials and may well produce the best data yet from the CDH project.
6. DISCUSSION

The production of Humanities and Social Science PhDs in POCARIM countries overall has remained relatively stable in the past decade. As a proportion of all PhDs being awarded in the EC this is also the case. There is no evidence of increasing demand for SS and HUM PhDs that outstrips supply of these qualifications, but this would be extremely difficult to monitor and quantify if such were the case. In the context of the EU-27 the POCARIM countries produce around four-fifths of all PhDs, so trends in the POCARIM countries are very similar to those for the EC as a whole.

On average, around one-quarter of all PhDs produced in POCARIM countries are in SS and HUM combined. In France and Hungary this figure is around 35% and 36% respectively. The overall capacity of HUM and SS PhD qualifications to make an economic and social impact in POCARIM countries can therefore be presumed to be quite varied. It cannot be known from these data whether the variation in the SS&H PhD capacity being produced in specific countries reflects social or economic differences, or is related to other factors such as institutional path dependency, for example. There is also no way to know way to understand from these data whether there has been substantive change in the training of SS and HUM doctors over the period monitored. Innovations in disciplinary theory, methods and the range of activities undertaken by SS and HUM doctors in engagement with societal demands are likely to have occurred, but are not reflected in such aggregate quantitative data. This means that just as the scale of the socio-economic impact of HUM and SS doctors is unknown, so is the scope of this impact, its specific characteristics, and the quality of the outcomes. These issues are to be explored in other POCARIM work packages.

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.

National level data will reveal more detail as regards this differentiation, the problem being that often national statistical collections use different disciplinary definitions or names. What is clear from the harmonized Eurostat data is that different countries produce different proportions of Law,
SBS and B&A PhDs. It seems likely that the overall impact of SS and HUM PhDs on society will be shaped by the composition of the disciplinary skills that are entering the workforce. A significant limitation of the secondary data is that so much variation is lost in the process of harmonizing statistical data for EC comparisons. The POCARIM project will also need to work below this level, by comparing directly the national statistical agency classifications of different countries to add some nuance to this dimension of the study, with all the attendant problems of incompatibility of statistical categories this entails.

The analysis of gender data found an interesting picture, with mixed results in relation to the participation of women in HUM and SS doctoral courses by country and by discipline. A gender perspective would suggest that differential impacts can be expected where there is a lack of women working in particular fields. Women are known to face entry barriers to some fields and obstacles to career development and progress within fields.

The principle of equality of opportunities for men and women is enshrined in the European Treaty of Amsterdam (Articles 2, 3). The ‘mainstreaming’ of gender equality of opportunity into all policy areas has been subsequently pursued. In 1999, the European Commission communication on ‘Women and science: Mobilising women to enrich European research’ recommended several measures to mainstream gender equality for integration into the Fifth Framework Programme. The European Council Resolution of 20 May 1999 on women and science welcomed these recommendations and encouraged their adoption by Member States. The recommended strategies and measures included 40% participation rate of women, on average, throughout the 5th Framework Programme, in Marie Curie scholarships, advisory groups and assessment panels. In November 1999, the Commission established the Helsinki Group on ‘Women and Science’, as a space for dialogue on local, regional, national and European policies, experiences and best practices for promoting gender equality and the participation of women in scientific fields. In its Resolution of 26 June 2001 the Council urged the Commission to reach its target of a 40 % participation of women at all levels in implementing and managing research programmes, while continuing to bear in mind the need to ensure scientific and technological excellence. The Council invited Member States to collect gender-disaggregated statistics in human resources in science and technology and to develop indicators in order to monitor progress towards equality of opportunity and equity of outcomes for men and women in European research. The Council also invited Member States and the Commission to continue support for the ongoing work of the Helsinki Group.
Overall, quantitative indicators suggest that whilst progress has made toward gender balance in European science, “[w]omen in scientific research remain a minority, accounting for 30% of researchers in the EU in 2006” (European Commission 2009: 7). Data also shows the careers pipeline remains leaky for women scientists with under-representation of women at higher levels/ranks. For example, women made up 36% of PhD graduates in science and engineering in the EU-27 in 2006, but just 22% of researchers at Level B (mid-level research positions) and 11% of Level A (top level research positions) within professional science (European Commission 2009: 74). The secondary data analysis contained here would suggest that women are represented at a level above 40% of PhD graduates in the vast majority of POCARIM countries in SS and HUM. However, this is not the case for all countries for all SS disciplines. This has a flow-on effect further down the research careers pipeline, as the above data on women’s occupation of high level research positions shows.

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.

The importance of gaining better understanding of such issues was highlighted by the sampling offered by the CDH data. These data, though limited, showed that variety can be expected in the roles and labour market relations that affect HUM and SS doctoral careers. These data made the need for an improved method for analysing the location and roles of HUM and SS doctors, systematically and at a population level, even more apparent. A population level methodology could complement the types of data collected in projects such as CDH advantageously in the future.

The development of specific occupational codes that specify disciplinary backgrounds would mean that occupational data and sector data can be matched to provide information on the types of doctoral training that is being applied to research work in society. The current International Standard Classification of Occupations (ISCO) does not include an occupational designation for Researcher (although it does include Research Manager somewhat perversely). If a Scientific
Researcher category in ISCO could be linked to the discipline of high level qualifications through ISCED, the back of this problem would in all likelihood be broken.

The basis of a solution along these lines may be found in the efforts of Norwegian agencies. An initiative designed to overcome this problem in Norway has involved the development of 27 specific disciplinary field codes for research occupations. This can be particularly important in gaining greater insight into the population of HUM and SS doctors working in the private sector, for example. The advantage of such an approach at the EC level would be that classification systems already in use would need to be revised, but statistical collection processes would not need to be altered. As things stand, a major information gap exists regarding the structure of HUM and SS doctoral careers and whereabouts the impact of the knowledge and skill carried by these highly skilled individuals is being most directly applied.

Another significant research gap exists in relation to documenting the mobility of HUM and SS PhD graduates, both during and subsequent to their doctoral training. It was noted that some embryonic data exist in the CDH project. However, these data are for a small number of countries and involve a snapshot that is not likely to be regularly repeated. Academic studies using CV analysis have begun to trace international movements of researchers. Bibliometric studies also are moving to cover this gap to some degree. It is likely that triangulated data from both these sources that is linked to survey or interview data such as that being gathered in the POCARIM project offer the best alternative for addressing the complex question of research mobility in the short- to medium-term.

In conclusion, this Report suggests that more progress is required in providing secondary data sources that can support the documenting of doctoral careers in the Humanities and Social Sciences. An improved population level data collection that links qualifications, occupations and sectors is clearly needed. Any assessment of the aggregate socio-economic impact of Humanities and Social Science doctors at the national and European levels would require such a harmonized and systematic support mechanism fit for this purpose.
7. DATA SOURCES AND OTHER REFERENCE DOCUMENTS


European Commission, (no date) Eurostat Statistics Database; Population and Social Conditions; Education and Training (edtr),


Organisation for Economic Cooperation and Development, (no date) OECD Science Technology and R&D Statistics, ISSN: 2074-4226 (online) DOI :10.1787/strd-data-en,

OECD (various dates), OECD/UNESCO Institute for Statistics/Eurostat Careers of Doctorate Holders (CDH) project, various documents and datasets,