Survey on Human Resources in Science and Technology

2009

Methodology

INSTITUTO NACIONAL DE ESTADISTICA

Index

1 Introduction

The importance of measuring the Human Resources dedicated to research is increasingly greater, in terms of the objectives of national policy. The development of policies in training, mobility and professional insertion of highly qualified personnel is one of the most important applications that will be included in this study. The improvement and harmonisation of databases with other countries allows government institutions to design specific policies to improve the qualification and the professional development of researchers and doctorate-holders in general. This segment of the population is considered crucial in the production, application and dissemination of knowledge, and therefore, essential in the competitive improvement of the country.

Countries such as Canada, the United States and Switzerland are already carrying out studies to measure this type of resource. In the framework of the European Union, the e-Europe Plan, within the framework of the Lisbon Agenda, also highlights the need for more information regarding the professional trajectory and the mobility of the most specialised workers. This need is evident in Regulation 753/2004 on Science and Technology, specifying the production of statistics on human resources in science and technology.

This same need appears in other countries around the world, and it is for this reason that the OECD, UNESCO and Eurostat work together towards the production of comparable data and indicators.

In 2010, an extensive study was carried out of doctorate-holders resident in Spain who obtained their doctoral qualification between 1990 and 2009 in some public or private Spanish university.

For the purpose of obtaining basic information regarding the doctorate-holders resident in Spain and providing our national experience to those international studies underway, the National Statistics Institute has carried out the Survey on Human Resources in Science and Technology.

2 Objectives

The main objective to develop is the analysis of the human resources that are dedicated to research, and to this end, the statistical unit established are those persons who are university doctorate-holders under 70 years of age (ISCED 6/PhD).

This study intends to measure the number of doctorate-holders, the employment, the international, national and intra-sectorial mobility of said doctorate-holders, as well as their wage characteristics. These statistics try to answer questions regarding the international mobility of highly qualified workers, since in some countries, the phenomenon known as "brain drain" is very common. On the other hand, a goal is to ascertain the level of adjustment between the training that the doctorate-holders have received and the employment supply of the current labour market. Once they are carrying out a professional activity, our goal is to ascertain the degree of satisfaction with their work (interest in the field of study, wages, working conditions, etc.) and the experience and productivity they have developed in their professional career (publications, patents, etc.).

3 Scopes

POPULATION SCOPE

This statistical research extends to all doctorate-holders, under 70 years of age, resident in Spain, who obtained the doctoral qualification in some Spanish university, whether public or private.

TERRITORIAL SCOPE

The research covers the whole Spanish territory.

TIME SCOPE

The reference period of the statistics is the year 2009, though some questions refer to the month of January 2010. In order to study international mobility, this considers the 10 years prior to the reference period, and so as to analyse professional experience and scientific productivity, questions are asked about the 3 years immediately prior to said reference period. These periods are determined by international organisations such as Eurostat or the OECD, for the purpose of providing the comparability of the results with the rest of the countries that conduct this survey.

4 Statistical framework

The survey framework used has been a directory of doctorate-holders provided to the INE by the University Council, which encompasses all those persons who have obtained the doctoral qualification at some Spanish university since the year 1990 (included).

4.1 Problems relating to the statistical framework

Moreover, additional problems arise, such as the fact that these directories are not updated as regards addresses and telephones, and that we also do not have the data available regarding doctorates in foreign universities and residents in Spain, or regarding Spanish doctorate-holders in foreign universities. In order to solve the problem of the updating of personal data, we turn to administrative registers, such as the Municipal Register of Inhabitants, even if they are not always updated. Lastly, the framework used for the selection of the sample is the result of the crossing of the directory provided by the Higher University Council with the data from the Municipal Register of Inhabitants.

Another of the problems that arise in these statistics is that, on trying to harmonise the questionnaires and the results tables, the levels of training of the different countries do not coincide. The greatest problem is to have a complete directory available of the doctorate-holders and their location. In the case of companies, it is usually somewhat simpler, due to the existence of directories such as the CCD, because they have responded to other surveys or because they have a website in which their registered address may be found.

As in this case, the sample unit is a person, and more specifically, that person who has obtained a doctorate, it is complicated to establish the population and sample for these statistics.

The INE, through an agreement with the Higher University Council, requested of the latter a listing of the doctorate-holders who obtained their qualification in the different Spanish universities. The problem that arose was that some universities did not have these listings, and most of them only had listings of doctorate-holders who completed their studies very recently.

The different countries do not coincide. This can lead, at times, to informants not knowing to which bracket or branch they belong.

5 Unit of analysis

The basic analysis unit of this survey is the individual, residing in Spain, who obtained a doctoral degree between 1990 and 2009, and who is younger than 70 years of age.

5.1 Classification characteristics

Doctorate-holders belong to level 6 of the ISCED 97 international education classification, which defines them as the staff dedicated to tertiary education programs that lead to an advanced research qualification, and therefore, are dedicated to advanced studies and original research, and not solely based on coursework.

5.2 Classification criteria:

Main criterion: Requirement of the presentation of a dissertation with high enough quality to be published, resulting from an original research project, and which represents a significant contribution to knowledge.

Subsidiary criterion: Preparation of the graduates to occupy posts as higher professionals in institutions that offer programs on an ISCED 5A level, as well as to occupy research posts in public organisations, in industry, etc.

Each doctorate-holder must be identified by her/his given name and surnames, identifier (National identity number, passport or identity card), date of birth and address.

6 Variables and definitions

6.1 Modules and variables

Below, we describe the modules that comprise the questionnaire of the Survey on Human Resources in Science and Technology, as well as their main variables:

6.1.1 PERSONAL CHARACTERISTICS

The first module includes the personal data of the surveyed person: place and date of birth, place of residence, nationality and relationship linking her/him with Spain, and the number of economically dependent persons for whom s/he is responsible. The person is also asked about her/his socio-economic origin, as well as the place of residence, and the number of economically dependent persons for whom s/he is responsible.

6.1.2 DOCTORATE

This second module attempts to gain information regarding their doctoral courses; the institution in which they took them, previous studies, field of research, type of financing, time invested in attaining the doctorate, and months elapsed from the time they finished their doctoral studies until they began working in something related.

6.1.3 EMPLOYMENT SITUATION

This module asks about the condition of the interviewee regarding their current employment situation, that is, whether s/he is employed (that is, if s/he is a self-employed worker or working for others) or whether s/he is unemployed or inactive. Subsequently, it asks about the number of hours worked a week, the level of income and the characteristics of their current job, such as location, sector and occupation. This module tries to detect the possible inadequacies between the level of studies and the employment activity carried out, as well as the degree of satisfaction with their current employment.

In turn, it attempts to ascertain the number of persons who have attained the post-doctorate in the last year, the reasons for doing this type of work and who is in charge of financing it.

6.1.4 UNEMPLOYED AND INACTIVE PERSONS

This section asks about the reasons why a doctorate-holder did not work during the reference period, both if s/he was unemployed and if s/he was inactive for some personal reason.

6.1.5 MOBILITY

This module tries to ascertain the movements of researchers and the reasons for these moves. In this way, we will ascertain the countries of origin and destination of research staff, and among other data, the state of the job supply for this professional segment in the different countries. The reference period in this section is the last 10 years, though questions are also asked regarding plans for moving during the following year.

6.1.6 PROFESSIONAL EXPERIENCE AND SCIENTIFIC PRODUCTIVITY

Another objective of this survey is to ascertain the professional productivity of each of the individuals who have attained a doctorate.

It tries to find out whether, during the reference period, the interviewee was carrying out research work, or even if s/he had done so previously; and both whether on some occasion s/he had done so or not, and the reasons for such.

On the other hand, it also includes several questions relating to patents and publications developed, to ascertain the fruits of the research.

In addition, questions are asked as to whether the person has constituted a company or directed some Master's or Doctoral Dissertation, whether s/he has collaborated with foreign researchers to know whether there is cooperation in the research on an international level, or whether s/he plans to do research in the immediate future.

6.2 Definitions

6.2.1 BASIC RESEARCH

Basic research consists of experimental or theoretical work that is mainly undertaken to obtain new knowledge on the essentials of observable phenomena and facts, without considering giving them any determined application or use whatsoever.

Basic research analyses properties, structures and relationships with the purpose of formulating and contrasting hypothesis, theories or laws. The reference to the fact of not being aimed at a specific application or use in basic research is crucial, given that the researcher might not have any knowledge of genuine applications when carrying out the research. The results of basic research are not normally made available for purchase, but rather, are generally published in scientific magazines or are directly divulged among institutions or interested persons. On occasion, the dissemination of the results of basic research may be considered confidential for security reasons.

6.2.2 APPLIED RESEARCH

This also consists of original work carried out in order to acquire new knowledge; however, it is mainly directed towards a specific practical objective.

Applied research is undertaken to determine the possible uses of the results of basic research, or to determine new methods or forms for attaining specific predetermined objectives. This type of research implies taking into consideration all existing knowledge, in depth, with the intention of solving specific problems. The results of applied research refer, firstly, to a single product or a limited number of products, operations, methods or systems. This research facilitates putting ideas into practice. The knowledge or information obtained in applied research is frequently patented, although it may also be kept secret.

6.2.3 EXPERIMENTAL DEVELOPMENT

Experimental development consists of systematic work based on existing knowledge, obtained from research and/or practical experience, aimed at the production of new materials, products or devices; at the establishment of new processes, systems and services, or at the substantial improvement of those already existing.

6.2.4 EMPLOYED

This employment situation includes both workers who are self-employed and those who work for others:

The self-employed worker is the person who, during the reference period, performs some work in exchange for some benefit or family gain.

The worker employed by others is the person who, during the reference period, performs some labour activity in exchange for a retribution or wages, in cash or in kind, or the person who, having a job post during the reference period, is temporarily not performing that activity. The reasons depend, to a certain extent, on the circumstances considered in the different countries. They may continue to maintain their wages, have insurance that guarantees the return to their post once the contingency has ended, or some agreement that determines the date of their return to work.

6.2.5 UNEMPLOYED

This is the person who, at an active age during the reference period, does not have work, is available to work, and is actively seeking employment. This job search may consist of having interviews, sending resumes, contacting Temporary Employment Agencies, etc. They may also be working on creating their own company.

6.2.6 INACTIVE

This is the person who is not a member of the active population. This group includes, for example, those persons dedicated solely to homemaking, retired persons, ill persons and persons with disabilities. The classification of the person as active / inactive depends only on the fact of whether s/he worked in exchange for a salary or wages, and in the case of not having worked, of a job search. Thus, a person who did not work during the reference period in exchange for a salary or wages and did not actively seek employment, would be considered inactive (even if they were in a sabbatical situation).

6.2.7 TEMPORARY CONTRACT

This is a contract with an end date.

6.2.8 PERMANENT CONTRACT

This is a contract without an end date. Normally, workers hired for an indefinite time have greater legal protection than those with temporary contracts.

6.2.9 PART-TIME WORKERS

are those who carry out their labour activity for 30 hours or less a week.

6.2.10 FULL-TIME WORKERS

are those who work more than 30 hours a week.

6.2.11 GROSS ANNUAL INCOME

is determined by adding the wages that the worker has received throughout the year (in one or more jobs) before subtracting deductions and taxes, and without considering bonuses, overtime or additional compensations, etc.

BUSINESS SECTOR

This comprises all those companies, organisations and institutions whose main activity is the mercantile production of goods and services (with the exception of higher education) for subsequent sale to the public at a price that corresponds to economic reality. A company is considered to be all legal entities that constitute an organisational unit that produces goods and services, and that enjoys a certain autonomy in decision-making, mainly at the time of using the available current resources. From a practical point of view, and in its more general definition, the concept of company is defined as a juridical or legal unit, that is, all individuals or businesses (companies, cooperatives, etc.) whose activity is recognised by Law, and which are identified by their corresponding Fiscal Identification Number (NIF).

This also includes private non-profit institutions that are mainly at the service of companies and which, to a large extent, are financed and controlled by them.

PUBLIC ADMINISTRATION SECTOR

This encompasses all those departments, offices and other organisations that supply the society, generally free-of-charge, with collective services, except higher education, which it would be neither easy nor profitable to supply another way, and which, likewise, administer public matters and take charge of carrying out the economic and social policy of the group.

This group must include all public institutions (except public companies and higher education institutions) irrespective of the manner in which they are included within the national budget and their level of jurisdiction (central, Autonomous Community, etc.). The activities of these centres are very diverse and numerous, and are usually related to the Public Administration, defence, public order, health, education, culture, economic promotion and development, well-being, scientific and technical development, etc.

It also includes private non-profit institutions mainly controlled and financed by the Public Administration.

PRIVATE NON-PROFIT INSTITUTIONS SECTOR

It includes private non-profit institutions outside the market and at the service of households (that is, the public in general), individuals and households. They provide individual or group services to households, either free-of-charge or at below-market prices. They may be constituted by associations of persons who provide goods or services destined mainly to their own members or with philanthropic ends. These institutions are financed with fees, contributions or donations from their members or sponsors, and with subsidies granted by companies and Public Administrations. Included within this sector are

institutions such as professional associations or cultural societies, charity organisations, aid or assistance bodies, trade unions, consumer associations, etc. Excluded from this sector are the following private non-profit institutions:

· those whose main activity is exercised to serve companies.

· those that mainly serve the public administrations.

· those which are completely or mainly financed and controlled by the public administrations.

· those which offer tertiary education services or are controlled by tertiary education institutions.

· those R&D foundations directed or controlled by doctorate-holders, with more than 50% of their financing coming from the State, which are included in the Public Administration sector.

HIGHER EDUCATION SECTOR

This sector includes all the universities (faculties, technical schools and university schools), PNPI working for higher education institutions, technological institutions and other post-secondary institutions, irrespective of the source of their financial resources and their legal situation. It likewise includes all research institutions, test stations, astronomy and clinical observatories that fall under the direct control of higher education institutions, which are administered by them or are associated with the latter.

Nationality is considered to be that link that each individual has with her/his State, acquired by birth or by subsequent nationalisation, by statement, option, marriage or other methods, in accordance with the legislation of the country.

A Researcher is that professional in charge of the conception or creation of new knowledge, processes, methods and systems, and also of the respective projects.

6.3 Classifications

The following lists the classification of fields of study or scientific disciplines (see Chart 1) and International Classification of Occupations (see Chart 2).

Chart 1. Fields of Science and Technology

The classification by field of study or scientific discipline used is that proposed by UNESCO in the Recommendation relating to the international standardisation of statistics on Science and Technology. This also includes sub-areas.

1. Exact and natural sciences

1.1.   Mathematics

1.2.   Computer and information technologies

1.3.   Physical sciences

1.4.   Chemical sciences

1.5.   Earth and environmental sciences

1.6.   Biology (excluding agriculture and medical sciences)

1.7.   Other natural sciences

2. Engineering and technology

2.1.   Civil engineering

2.2.   Electrical engineering, electronics and telecommunications

2.3.   Mechanical engineering

2.4.   Chemical engineering

2.5.   Materials engineering

2.6.   Medical engineering

2.7.   Environmental engineering

2.8.   Environmental biotechnology

2.9.   Industrial biotechnology

2.10.   Nanotechnology

2.11.   Other engineering and technologies (food, beverage and others)

3. Medical sciences

3.1.   Basic medicine

3.2.   Clinical medicine

3.3.   Health sciences

3.4.   Medical biotechnology

3.5.   Other medical sciences (forensics and other medical sciences)

4. Agricultural sciences

4.1.   Agriculture, forestry and fish hatchery sciences

4.2.   Animal and dairy sciences

4.3.   Veterinary medicine

4.4.   Agricultural biotechnology

4.5.   Other agricultural sciences

5. Social sciences

5.1.   Psychology

5.2.   Economics and business

5.3.   Education sciences

5.4.   Sociology

5.5.   Law

5.6.   Political science

5.7.   Economic and social geography

5.8.   Journalism and communications

5.9.   Other social sciences

6. Humanities

6.1.   History and archaeology

6.2.   Language and literature

6.3.   Philosophy, ethics and religion

6.4.   Art (art history, fine arts and music)

6.5.   Other humanities

Chart 2. ISCO-08 Occupations

This chart provides the breakdown of the ISCO-08 classes in which the doctorate-holders are found. The International Classification of Occupations consists of ten main groups on the highest breakdown level, subdivided into 43 groups.

100   Directors and managers

Scientific and intellectual professionals:

211   Physicists, chemists and similar professionals

212   Mathematicians, actuaries and statisticians

213   Professionals in biological sciences

214   Engineers (excluding electro-technology engineers)

215   Electro-technology engineers

216   Architects, town planners, surveyors and designers

221   Medical doctors

222   Professionals in nursing and midwifery

223   Professionals of traditional and alternative medicine

224   Paramedical practitioners

225   Veterinarians

226   Other health professionals

231   University lecturers and professors from other higher education establishments

232   Vocational training teachers

233   Secondary education teachers

234   Primary education and preschool teachers

235   Other professionals working in education

241   Specialists in finances

242   Specialists in administration organisation

243   Professionals in sales, commercialisation and public relations

251   Software and multimedia developers and analysts

252   Specialists in databases and computer networks

261   Professionals in law

262   Filing clerks, librarians, curators and the like

263   Specialists in social sciences and theology

264   Authors, journalists and linguists

265   Creative and interpretative artists

Intermediate-level technicians and professionals

311   Technicians in physical sciences and engineering

312   Supervisors in mining, manufacturing industry and construction engineering

313   Technicians in process control

314   Intermediate-level technicians and professionals in biological sciences and the like

315   Technicians and controllers in maritime and aeronautical navigation

400   Administrative support personnel

500   Workers in services and salespersons in shops and markets

600   Farmers and qualified livestock and fishing workers

700   Skilled workers, operators and artisans of mechanical arts and other trades

800   Installation and machinery operators and assemblers

900   Elementary occupations

000   Military occupations

7 Sample design

7.1 Type of sample. Sample selection.

An independent sample has been designed for each Autonomous Community, for the purpose of obtaining a better representation of the national population of doctorate-holders.

Sampling with equal probabilities has been used.

Doctorate-holders have been classified, according to their Autonomous Community of residence, and the sample selection has been carried out independently in each one of them, through a systematic equal probability sampling with a random start, following the ordering by year of birth of the doctorate-holder, age, university where s/he did the doctorate and province of residence.

7.2 Sample size. Allocation

In order to cover the objectives of the survey, of providing estimates with a given degree of reliability on a national level, a sample of 6,000 doctorate-holders has been selected.

Autonomous Community	Doctorate-holders
Andalucía	733
Aragón	242
Asturias	215
Baleares	161
Canarias	261
Cantabria	146
Catilla y León	322
Castilla-La Mancha	186
Cataluña	730
Comunidad Valenciana	592
Extremadura	151
Galicia	360
Madrid	1,011
Murcia	250
Navarra	202
País Vasco	206
La Rioja	123
Ceuta and Melilla	109
Total	6,000

Table 7.1

The sample has been distributed throughout the Autonomous Communities, assigning a part of the sample, 30 percent, uniformly, and the rest proportional to the size of the Autonomous Community, measured as the number of doctorate-holders residing therein.

Table 7 presents the distribution of the sample among the different Autonomous Communities. l.

7.3 Estimators.

To estimate the characteristics of the survey, a ratio estimator has been used, for the purpose of adjusting the framework to the information provided by the University Council regarding the doctorate-holders.

The final estimator of characteristic X has been obtained in two steps:

a) Expansion estimator based on the design factor, with non-response correction on a level of Autonomous Community A (Horvitz-Thompson estimator).

$$\hat{X}_A^{H-T} = \frac{N_A}{n_A^*} x_A$$

with

n_A^* is the effective sample size in Autonomous Community A.

N_A is the number of doctorate-holders, according to the framework from which the sample in Autonomous Community A is selected.

x_A is the number of doctorate-holders with characteristic x in Autonomous Community A.

B) Ratio estimator using, as an external source, the total doctorate-holders on a national level provided by the University Council. The available framework is thus adjusted.

The final estimator takes the following form:

$$\hat{X}_A^R = \frac{\hat{X}_A^{H-T}}{\hat{N}_A^{H-T}} \hat{N}_A^*$$

with

$$\hat{N}_A^* = \frac{N_A}{N} N^*$$

where:

N is the number of doctorate-holders according to the framework.

N* is the number of doctorate-holders according to the statistics.

This last step is making the hypothesis that the national data from the statistics is divided among the different Autonomous Communities, respecting the distribution of the framework.

Prior to use in the calculation of the elevation factor, value NA has been deflated by the estimation of the number of deceased doctorate-holders in each Autonomous Community.

8 Data processing

The data processing phases are the following:

8.1 Information collection

Due to insufficient means, the information collection has been performed through an external company. The following of the work schedule and the information quality was carried out from the Central Services of the INE. The response rate has been 68.7%, and the percentage of incidences, 31.3%.

The survey inspectors are responsible for the theoretical and practical training of the personnel involved therein, and for the control of the work relating to the collection of the information. To this end, the corresponding manuals and training and enquiry documents are prepared.

The statistics are included in the National Statistical Plan, and are therefore compulsory.

The personnel involved in the survey work are compelled by law to preserve statistical secrecy.

The department promoting the operation issued, to the company in charge of carrying out the study, the directory with the detailed information of the sample to be studied.

The data collection process began in March and ended in July 2010.

One of the first phases of the work consisted of the search for telephone numbers, professional addresses or any other additional data that would allow for the localisation of the informant, when this was not available, or when the available data was erroneous.

Initially, a mailing was sent, to the sample units, of the letter of presentation, the questionnaire and a pre-stamped envelope, to the **home address** of the informant. The letter of presentation specified the different methods of participating in the survey: in addition to the print questionnaire, each surveyed person has been provided an access key and password to be able to access the

online questionnaire completion. S/he has also been provided a free telephone number to contact for any type of enquiry.

When the informants did not provide their data in the time estimated for the survey (1 week from the mailing), telephone contacts were begun, so as to verify the receipt of the questionnaire, register possible incidences, carry out new mailings (by post and/or fax) and encourage completion. If the informant showed little interest in its completion and mailing (as described previously), we would show the willingness to interview her/him personally in her/his home or workplace at the most convenient date and time; or even the possibility of responding to the survey by telephone. If alternate postal addresses were available for those units in which the questionnaire envelope was returned by the Postal Service, the mailing was repeated with the initial documentation.

On this occasion, approximately 18% of the informants are estimated to have participated in the previous survey. In order to enable the completion of the data, if they opted to do so online, some of the data would already be completed from the previous collection, though with the possibility of modifying it.

The collection, in a first phase, was by the posted return of the questionnaires, in addition to the possibility of receiving the data by telephone, fax or website. In a second stage, for the questionnaires that were not received by any of the first phase methods, efforts were made to obtain them via personal visit to the residence of the informant. In all of the collection processes, action calendars were established under a strict monitoring therein.

8.2 Manual control and filtering

of the questionnaires, with the purpose of recovering the possible lack of data or errors prior to their recording.

8.3 Recording of the questionnaires

received, performing the first filtering of errors that have not been detected in the first manual review of the questionnaire, also detecting the information inconsistencies. The recorder shall filter the errors that the computer application detects, and to this end, shall review the questionnaire again, and check whether it has been a recording error or it is necessary for the data to be confirmed by the informant.

8.4 Data filtering

by computer, in the Central Services, for the detection of range errors (values that are nil or incompatible with the concept that they include) and consistency errors (which reflect inconsistencies between different questions in the questionnaire).

8.5 Imputation of partial non-response

8.6 Data analysis

8.7 Creation of the file final

8.8 Obtaining of results tables

once the filtering is complete, and the imputation of the erroneous and/or missing data has been carried out, we proceed to obtaining the most relevant tables that enable obtaining the main conclusions of the survey.

9 Results tables

The use of the tables has been structured in such a way that the following target characteristics of study are tabulated:

1. Personal characteristics of the doctorate-holders.

    1.1.   Percentage of doctorate-holders by age and sex.

    1.2.   Educational level of the parents of the doctorate-holders.

    1.3.   Professional level of the parents of the doctorate-holders.

    1.4.   Type of centre in which the doctorate-holder undertook her/his studies prior to the university studies, according to socio-economic origin.

2. Characteristics of the doctorate.

    2.1.   Percentage of doctorate-holders, by doctoral area and sex.

2.2. Percentage of doctorate-holders, by main source of financing and doctoral area.

3. Employment situation of the doctorate-holders.

3.1. Percentage of doctorate-holders, by doctoral area and employment situation at 31 December 2009.

3.2. Percentage of doctorate-holders, by age and employment situation at 31 December 2009.

3.3. Percentage of doctorate-holders, by employment situation and main labour activity at 31 December 2009.

3.4. Percentage of employed doctorate-holders, by doctoral area and employment sector.

4. Self-assessment of the employed doctorate-holders.

4.1. Degree of relationship between the doctoral studies, by doctoral area, and main job at 31 December 2009.

4.2. Degree of satisfaction of the doctorate-holders with their main job at 31 December 2009, by criterion and sex.

5. International mobility of doctorate-holders.

5.1. Mobility of doctorate-holders, by type of mobility.

5.2. Reasons to come to live in Spain for at least 3 months during some period of time between 2000 and 2009, by sex.

5.3. Reasons to go to live outside of Spain for at least 3 months during some period of time between 2000 and 2009, by sex.

5.4. Reasons of doctorate-holders living in Spain at 31 December 2009, for planning on leaving, by sex.

6. Professional experience and scientific productivity.

6.1. Listing of doctorate-holders with research activities at 31 December 2009.

6.2. Reasons why s/he decided to work as a researcher, by sex.

6.3. Constitution of a company, tutelage of some Master or doctoral dissertation, partnership with foreign research groups between January 2007 and December 2009.

6.4.   Intention of working in research during the 2010-2011 period.

Moreover, results tables may be obtained that meet the information requirements of national and international institutions, as well as individual users interested in the subject, in all cases preserving statistical secrecy, with the limits established by the sample errors.