ECOOM briefs

CENTRE FOR R&D MONITORING

Nr. 10
March 2014
Ghent University
ecoom@UGent.be

What do Doctorate Holders in Belgium do? Key results from the OECD survey 2010.

Authors: Karen Vandevelde (1), Karl Boosten (2).

(1) ECOOM-UGent (2) Belgian Sciency Policy

ECOOM, 2014

Contact: ecoom@ugent.be

STRENGTH IN NUMBERS

Since 1990, the number of doctorate degrees awarded at Belgian universities has increased more than twofold. In the academic year 2008-2009, for example, 1,928 researchers received their Ph.D. For a number of researchers this causes career stress as they see the competition for a limited number of academic positions at professorial level increase significantly. For a country focused on fostering innovation and a knowledge intensive society, the available talent with high-level research training creates huge opportunities. In Belgium, the extra investments in doctoral education were a deliberate attempt to revitalise the economy with more staff who are highly-educated, innovation-ready and equipped with wide-ranging knowledge.

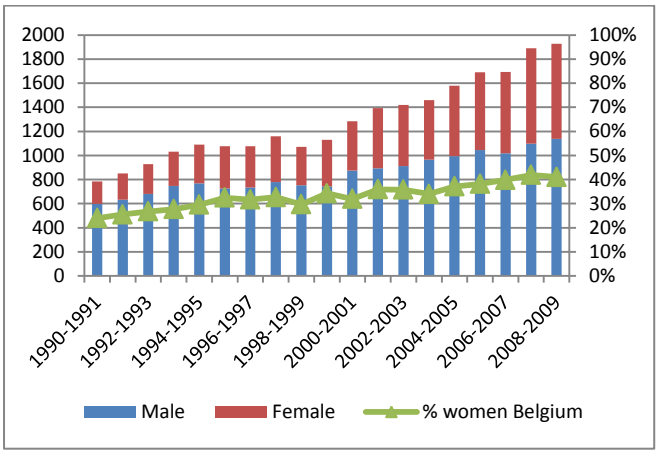


Figure 1. Doctorate degrees awarded in Belgium, by gender (1990-1991 to 2008-2009). Source: CREF (French Community) and ECOOM (Flemish Community).

In order to monitor the extent to which these policy ambitions are being realised, the OECD launched its Careers of Doctorate Holders project (CDH) examining the career paths of doctorate holders in more than 20 countries. Belgium participated in this wide-ranging survey for the first time in 2006; the subsequent survey of 2010 provided the source material for the current report. The Federal Science Policy Office, who coordinated the survey questionnaire, collaborated with the UGent team of the Flemish interuniversity Centre for R&D Monitoring to analyse these data. They examined the careers, job mobility and research involvement of those who obtained their Ph.D. in the last decade of the 20th and the first decade of the 21st Century. This document includes the key findings; the full report is freely available for download.

CAREER DIVERSITY

The diversity in the career patterns of doctorate holders is impressive and varies significantly according to the scientific discipline of their degree. Five years after graduation, 33.0% of all doctorate holders are still working at university - often as postdoctoral researchers on temporary contracts. The second largest sector of employment is industry, attracting 22.7% of doctorate holders. This group consists mostly of researchers in the natural sciences, engineering, and agricultural sciences. Government is the third largest sector of employment, providing employment to about 11.7%, although engineering and medical graduates are less represented

amongst this group. Hospitals and non-university higher education are host to 7.6% of doctorate holders, although the former will attract primarily graduates with a medical degree, and the latter graduates with a Ph.D. in humanities and natural sciences. Also 8.7% are employed in the service sector. The share of doctorate holders employed in the private non-profit sector, the business sector other than industry, and in non-higher educational institutions (e.g. secondary education) is rather small. The most common occupations among doctorate holders are science and engineering professionals (44.1%), teaching professionals (21.7%) and managers (12.1%). Only 2.5% of the respondents were unemployed at the time of the survey and doctorate holders in employment tend to enjoy favourable salaries and benefits.

THE IMPACT OF THE PH.D. ITSELF

The extent to which their current job is still related to the topic of the doctorate, varies much according to the fact whether doctorate holders are still working at university or are employed in other sectors. For more than 70% of doctorate holders employed in university, their job content is closely related to their doctoral research, whether this is one year, three years, five years or ten years after graduation. For those doctorate holders having left the university for maximum one year, only 40% indicate a *close* relation between their doctorate and their job content but another 36% indicate there is still a *partial* relation. This percentage decreases over the years to only 25% of doctorate holders still reporting a close relationship to their Ph.D. research. This is perfectly understandable as people make further career progress, possibly move into management jobs and acquire new work experience which may become more relevant to their current job than the Ph.D. they obtained many years before.

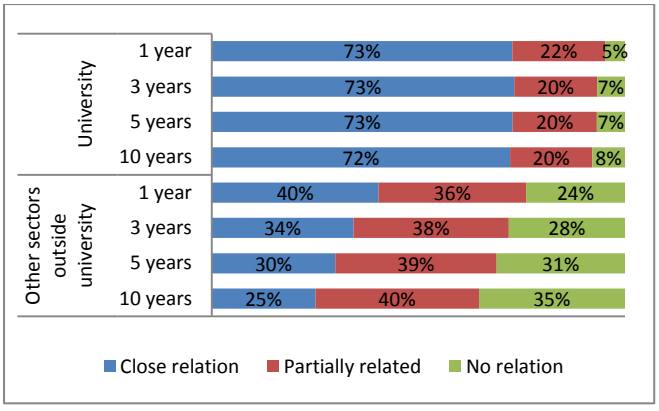


Figure 2: Relation between the doctoral research and the job content of doctorate holders 1 year (N=3300), 3 years (N=2965), 5 years (N=2411) and 10 years (N=1341) after graduation (Source: CDH Database 2010)

RESEARCH AS A PROFESSION

Carrying out Ph.D. research, however, is more than specialising in one specific topic. Doctorate holders are not only experts in their field but also all-round researchers with a wider knowledge of methods and theories. Generally, almost 70% of responding doctorate holders in the Belgian CDH still 'carry out research' or 'are involved in research' as part of their main job. Of those who are currently not involved in research, approximately 46% conducted research in their previous employment(s). As such, a large majority of all PhD graduates are employed as researchers for at least some of their career. This research involvement varies, however, according to sector of employment.

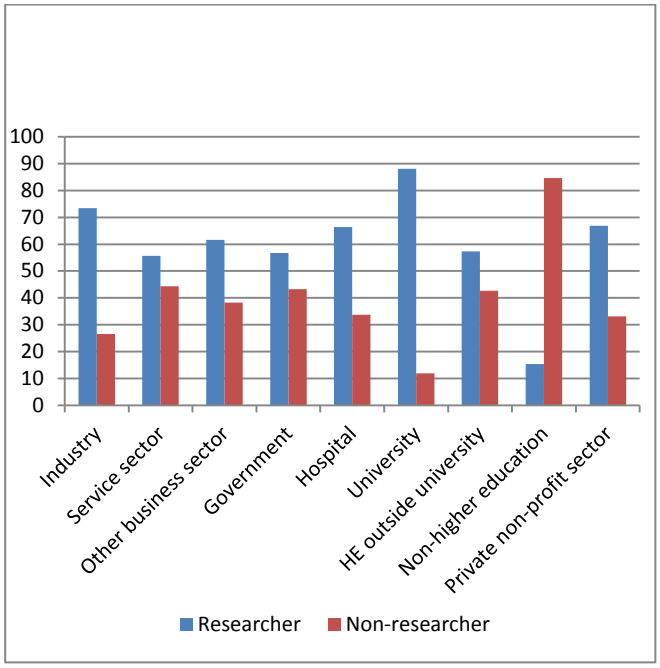


Figure 3: Number of researchers by sector (Source: CDH Database 2010)

The European Commission has repeatedly stated that its knowledge intensive economies requires increasing numbers of specially trained researchers. Carrying out Ph.D. research thus proves to be an excellent preparation for a research or research-related career, whether this is in academia, in R&D or in jobs that are only peripherally related to new or applied research. The labour market, however, may not yet sufficiently capitalise on this potential, since a substantial group was not involved in any research activities at all after the doctoral degree was obtained.

SKILLS AND CONTINUOUS DEVELOPMENT

High-level skills are often considered to be the key in making a successful transition from doctorate research to a further career and in the mutual appreciation of employer and employee with regard to job demands. In

order to examine this, the CDH-survey investigated doctorate holders' perception of their own skills levels at the time of the doctorate degree and compared this with the extent to which they needed these skills in their current job. The further apart these scores, the wider the 'gap' between acquired and required skills – albeit in the perception of doctorate holders themselves, not of those who employ them. Generally, doctorate holders' acquired research skills seem to closely match the current job requirements (8.3 versus 7.7. on a scale of 10), with a slight 'surplus' of research skills that are no longer relevant in the current job. More important however in their current job, are personal effectiveness skills, team working skills and communication skills (8.6, 8.4 and 7.8 respectively), for which respondents report to have been less prepared at the time of doctorate graduation (7.7, 6.2 and 6.3 respectively). Finally, business skills - a cluster of skills involving leadership, commercial skills, project management and intellectual property - are generally perceived to be less important in doctorate holders' jobs (6.3 on a scale of 10). The differentiation between sectors of employment is however significant: positions in industry, the service sector and private non-profit sector rely on these skills to a much larger extent than jobs in the public sector do. In a context of continuing professional development and on-the-job learning, this does not necessarily constitute a problem, but focusing on skills development during the doctorate research period could significantly enhance the transition from research training to further employment.

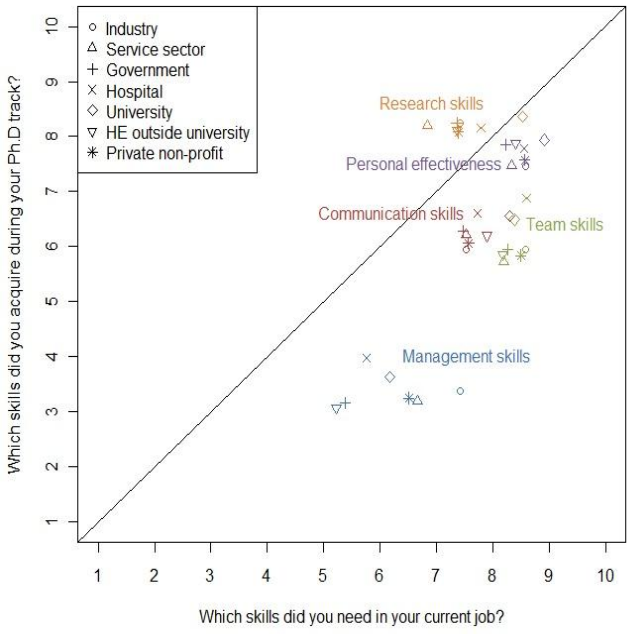
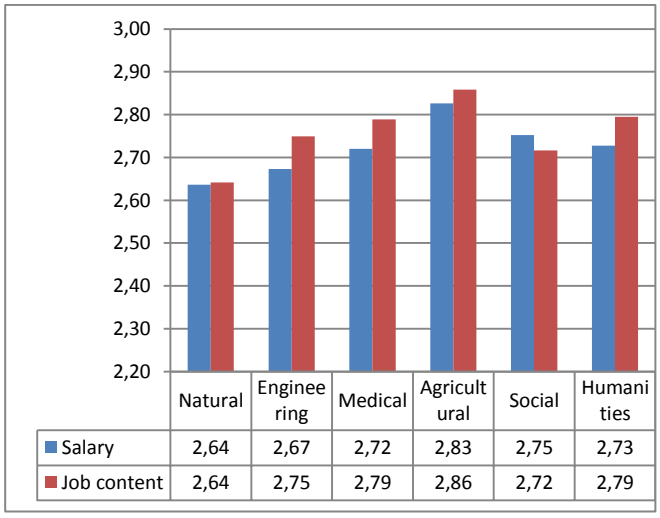


Figure 4: Competencies needed vs. acquired in different sectors (N=3563) (Source: CDH Database 2010)

THE WISDOM OF HINDSIGHT

Next to formal job qualifications, the survey also questioned doctorate holders' own perceptions as to their career choices and career progress. These, too, are important indicators for measuring the impact of their investment in doctorate level research. Looking back at the moment of their Ph.D. graduation, the majority of doctorate holders signal that the transition phase towards further employment was difficult. They felt at that time they were ill-prepared and ill-informed about career opportunities (mean score 5.2 on a scale of 10). Nevertheless, they were quite positive about the instrumental role of their Ph.D. to find a job (mean score 6.4) and the majority felt that their Ph.D. experience enabled them to bring added value to their current work environment (mean score 7.4).

Internal motivations such as personal interest (79.9%) and the creative and innovative work associated with doctoral research (51.5%) are the main elements that excited doctorate holders to start their Ph.D. With regard to their current career, approximately 60% of the respondents indicate being satisfied with the content of their job as well as with their salary.



	Natural	Engineering	Medical	Agricultural	Social	Humanities
Salary	2,64	2,67	2,72	2,83	2,75	2,73
Job content	2,64	2,75	2,79	2,86	2,72	2,79

Figure 5: Average satisfaction with regard to salary and job content per scientific discipline, on a 4-point scale (Source: CDH Database 2010).

THE INTERNATIONAL EXPERIENCE

The CDH survey also aimed to gain insight into researchers' mobility, but like many similar surveys in other countries, 'truly internationally mobile' researchers are hard to trace. Foreign researchers, for example, represent 27.9% of all doctorate holders but only 4.2% in the CDH dataset were from outside Belgium. Also the Belgians who have now established a career abroad, could often not be traced with their national registration number.

Looking at the careers of those who have lived abroad and returned, the younger generation has spent more time abroad for professional or research purposes than the older generation. Researchers, too, have been more internationally mobile than those in other professions (23.7% versus 13.8%), and those in academia (31.7%) more than their colleagues in industry (14.2%) and government (15.1%). These data demonstrate an important shift in academic career structures: international research experience is becoming more of a requirement for further career progress, while jobs in other sectors are less often associated with international experience.

CONCLUSION

The 2010 CDH dataset for Belgium gives a good insight in the role of doctorate holders in society, which is much broader than that of an academic position at a Belgian university. Doctorate holders' careers are very diverse, and while doctorate holders move relatively little across sectors, many of them do move between jobs and/or across national borders. They tend to be satisfied with their job contents, their salaries and the added value of their Ph.D., although there is room for improvement in facilitating the transition from academic to non-academic employment. Better collaboration with other sectors during the doctorate research could be one of the solutions; broader skills training, too. The fact that many doctorate holders are still involved in research and research-related activities when they move to private companies, industry and other organisations outside of higher education, points to the transferability of high-level skills and knowledge. It also highlights the employability of doctorate holders across a wide range of sectors.

The focus on innovation, creativity and research itself still make academia an attractive sector of employment for many doctorate holders, despite the observation that the financial rewards are less attractive than those in other sectors of the labour market.

The picture is however not entirely positive in all research fields. Doctorate holders with a degree in the humanities, in particular, generally report to be less satisfied about their career progress, their opportunities and the value of their Ph.D. degree than their colleagues in other engineering. Their overall chances to capitalise on their research potential tend not to be as high, whereas graduates in medical sciences, agricultural sciences and social sciences reporting to be somewhere in the middle between these two. In the short term, this may be considered as a supply-demand mismatch, but in the long term, the prevalence of doctorate holders in a wide range of professions, sectors and areas of expertise might have the potential to transform a much broader part of the labour market into a knowledge based economy.

REFERENCES

Karl Boosten, Karen Vandevelde, Hanne Derycke, Adriana te Kaat, Ronan Van Rossem (2014) Careers of Doctorate Holders Survey 2010. R&D and innovation in Belgium Research Series nr. 13. Belspo.

Full report available as free download :
http://www.ecoom.be/doctoralcareers

http://www.belspo.be/belspo/organisation/publ_nl.stm