

Research careers, pay and conditions

Research careers, pay and conditions refer to research and career progression opportunities for researchers, including research funding and infrastructure for researchers at universities and firms, and improving the

What are research careers, pay and conditions?

Research careers, pay and conditions refer to the patterns of researchers' contracts, levels of salaries, working conditions, and available research and career progression and development opportunities. More precisely, they refer, on the one hand, to the features of research contracts (i.e. temporary or short-term contracts, permanent positions, full or part-time, incentives, etc.), levels of salaries (gross annual earnings, salary, benefits, allowances, pension and health insurance schemes, etc.) and characteristics of research careers (i.e. early career research positions, level of responsibility, degree of independence, mobility and lifelong training schemes, contribution to the society, etc.). On the other hand, they also relate to working conditions, including the distribution between research, teaching and administrative time, available funding for research, collaboration opportunities, and material conditions available for research (i.e. R&D infrastructures).

How are research careers, pay and conditions important for innovation?

Beyond researchers' own sense of personal development and achievement, the combination of higher opportunities for career progression and research, a higher salary, and better working conditions should increase interest in research careers and facilitate the recruitment and attraction of talented or promising researchers, which should in turn increase the quality of research outcomes. The presence of talented and/or promising researchers should positively affect the performance of research activities, notably in terms of publications, "proof of concept" related activities, or in terms of teaching and research activities. Good working conditions, for example, in the form of high-quality research infrastructure, are an important consideration and can also enhance opportunities for R&D collaborations with other research organisations and firms.

What is the evidence on research careers, pay and conditions?

The great majority of doctorate holders are working in the public sector, particularly in universities, while the business sector employs more than half of the research population in the OECD area (Auriol, 2010; OECD, 2011). Although doctorate holders represent a crucial human resource for research and innovation, and benefit from an employment premium and a higher international mobility, evidence shows that they encounter some difficulties in the labour market, notably in terms of working conditions. Satisfaction levels in aspects other than pay are particularly high for individuals working in the higher education sector. The vast majority of doctorate holders feel more satisfied with those criteria linked to the content of the work (intellectual challenge, level of responsibility, degree of independence and contribution to society) than with those related to employment conditions (salary, benefits, job security, location and opportunities for advancement) (Auriol, 2007). Moreover, the figure below reveals that in most countries for which information is available, doctoral graduates are better paid when they do not work as researchers, especially outside the enterprise sector (OECD, 2010).

Figure 1. Percentage difference in median gross annual earnings between doctorate holders working as researchers and those not working as researchers, 2006

Source: OECD/UIS/Eurostat CDH data collection 2009, in OECD 2010 (p. 51).

Reading: In the United States, doctorate holders earn 12% more when they do not work as researchers, except in the business sector, where as researchers they earn 4% more than non-researchers.

Universities and PRIs may encounter several difficulties in recruiting young researchers with high potential or experienced researchers, due to such factors as low starting pay, limited material rewards at senior levels compared with other professions, little wage differentiation between cohorts, strong specialisation by field of research, a resistance to training in broader teaching or managerial skills, and difficulties in moving institutionally and internationally because of tenure, pension rights, and attitudes toward movement and job changes. Working conditions, employment structures and a decline in the linear career track for academics greatly affect the attractiveness of research careers (OECD, 2011). Despite these observations and as shown by the figure below, temporary positions appear to be increasingly common in the academic sector (Careers of Doctorate Holders, project report 2013, Auriol et al., 2013).

Figure 2. Doctorate holders on temporary contracts over career path, 2009 (As a percentage of employed doctorate holders)

Notes : *Data for Belgium, Germany, Hungary, the Netherlands and Spain refer to graduation years 1990 onwards. *For the Netherlands, data refer to employees only. *For the Russian Federation, data relate only to those doctoral graduates employed as researchers and teachers. *For Spain, there is limited coverage of doctorate holders for the years 2007 to 2009. *For Spain, doctorate holders with "unspecified contracts" refer to self-employed. *Data for Turkey exclude foreign citizens.

Source: OECD, based on OECD/UNESCO Institute for Statistics/Eurostat data collection on careers of doctorate holders 2010; Eurostat 2012 (in Auriol et al. 2013, p. 16).

Regarding the mobility of doctorate holders, evidence shows that 15% to 30% in European countries have experienced mobility over the past ten years and that mobility may be increasing. However, mobility is more frequent among doctorates not working in research. Mobility of doctorate holders is driven by a variety of motives, including such factors as the end of the post-doc or job contract, returning to the home country, job or economic factors, academic factors (i.e. better possibilities to publish, possibility of creating their own research team or new research area), family reasons, personal reasons and political reasons (Auriol 2010; Auriol et al., 2013; Careers of Doctorate Holders project report 2013).

What other topics relate to research careers, pay and conditions?

A number of topics relate to research careers, pay and conditions:

- The availability of finance for public R&D is a key factor. Low levels of funding tend to result in relatively poor pay and working conditions, particularly with regard to available equipment. It also sends a negative signal to young people considering a career in research.

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- Norms and incentives in the research and engineering communities often provide a reference framework for research career advancement. However, in some instances, such norms and incentives can stifle innovation and creativity.
 - Conditions for female researchers (i.e. workplace practices such as non-transparent hiring and promotion) and lack of incentives for women to enter into a research career may also reduce the participation of women, depriving the research system of a high-quality workforce and limiting diversity, which are essential for innovation to flourish.
 - In addition to a lack of human resources, the lack of quality and appropriate research infrastructures may severely hamper researchers and their organisations in achieving high-quality research or in attracting leading research and innovation projects.

What policies relate to research careers, pay and conditions and the contributions of universities and PRIs?

The importance of a strong research base and a high-quality research workforce to countries' innovation performance has led several governments to design a wide range of incentives for research careers and researchers. Beyond improving information on research careers, labour market opportunities and prospects for researchers, public policies related to research careers, pay and conditions mainly aim at improving the attractiveness of research careers, at enhancing pay and working conditions, and at providing appropriate support for the mobility of university and PRI researchers.

To achieve these goals public policies may:

- improve the employment and working conditions of researchers at universities and PRIs (e.g. increase earnings and social benefits, improve pension and health insurance schemes, provide more adequate R&D infrastructure, reduce the time allocated to administrative tasks, etc.),
- favour a greater level of autonomy and responsibility for university/PRI researchers, coupled with appropriate accountability regimes,
- support lifelong training schemes for researchers from universities and PRIs,
- support top research teams and individuals, and fund excellence in research at universities/PRIs (e.g. through awards and prizes). However, this should not reduce the necessary support for broad-based research capacity and for new and emerging areas,
- enhance financial support for the recruitment of young and promising or talented researchers, or ease the entrance conditions of young or foreign researchers (e.g. ease labour market regulation, simplify recruitment procedures),
- favour systematic open recruitment and ensure non-discriminative recruitment procedures for women at universities and PRIs,
- enlarge research opportunities (e.g. through R&D funding, opportunities for greater participation in leading or large-scale research projects, etc.) and career progression prospects for trained researchers at universities/PRIs,
- ensure a proper balance between the supply and demand of researchers, and an adequate provision of R&D infrastructures at universities and PRIs, in order to ensure a more efficient use of human resources for research.

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- Regarding the mobility of researchers, public policies may:
 - reduce institutional and financial barriers to the mobility of researchers and doctorate students, and design funding for different forms of mobility oriented to individuals, including short-term mobility options,
 - meet the social security and supplementary pension needs of mobile researchers from universities and PRIs.

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