

Training & Employment

n° 91 January-February 2011

Tough going in labour market for PhDs

One proven way of protecting oneself from 'precarity' and unemployment is to obtain a university degree. However, some PhDs are experiencing increasing difficulties in finding stable employment. Traditionally destined for careers in academic and other publicly funded research, they have increasingly had to look to the private sector in order to widen their employment prospects. However, it is proving difficult for both PhDs and firms to make the necessary adjustments.

Julien **Calmand**
(Céreq)

Studies carried out by Céreq show that, in general, possession of a higher education qualification offers protection against cyclical downturns. In other words, the more highly qualified a young person is, the lower his or her risk of being unemployed. However, some PhDs are experiencing increasing difficulties in finding employment. Many surveys across the world have revealed the growing problems they are encountering in obtaining stable employment. French PhDs are no exception in this regard: almost 10% of those who received their doctorates in 2004 were unemployed three years afterwards, in 2007. Traditionally, PhD students have planned to work in academic research. However, public spending on research has been declining steadily since 2003. In response to their increasing difficulties in finding employment, the state has encouraged new PhDs to seek work in the private sector. However, when they attempt to enter the labour market, they face stiff competition from engineering and business school graduates and even, depending on the subject they have studied, from holders of masters degrees as well. For PhDs, working

Employment
Qualification
survey
transition to work
Longitudinal data
Higher Education

outside the research sector is proving to be a second-best option, which may result in some feeling dissatisfied or downgraded. After all, when they submitted their theses, fewer than 10% of them said they were considering this option.

Job search becoming exceptionally difficult

Although they have the most prestigious of all university degrees, PhDs are experiencing certain difficulties in entering the labour market. While the unemployment rate varies little from one generation (2004) to another (2001), the situation is less favourable when it comes to finding stable employment.

Almost 10% of those who obtained their doctorates in 2004 were unemployed three years after leaving university. Furthermore, when they got their first jobs, 80% of this cohort of PhDs found themselves on fixed-term contracts, compared with 60% of those who obtained their doctorates in 2001. Even three years after submitting their theses, 27% of them were still on fixed-term contracts. This is a far higher figure ●●●

The labour market situation of PhDs, engineering school graduates and holders of masters degrees three years after graduation

	Unemployment rate (3 years after graduation)		Share of fixed-term contracts (3 years after graduation)	
	2004	2007	2004	2007
All PhDs	11%	10%	24%	27%
CIFRE funded	6%	6%	17%	14%
State research grants	9%	6%	23%	22%
Engineering school graduates	6%	4%	8%	8%
Masters degrees	11%	7%	23%	21%

Sources: *Génération 2001* and *Génération 2004* surveys.

Cifre • Convention industrielle de formation par la recherche/ Industrial agreement for training through research. Under the terms of the scheme, firms provide funding for a PhD on a topic jointly selected by the firm and the host research centre. The contract is concluded between a higher education establishment and a firm, voluntary association or regional authority.

... than that for their counterparts who graduated from engineering schools or masters programmes (8% for engineering graduates and 21% for holders of vocational masters degrees), who are their main competitors in the labour market. In addition, many more of them were unemployed than the 4% of engineering school graduates and the 7% of the masters programme graduates who found themselves in that situation. And yet, analysis of the PhDs' socio-demographic and educational profiles does not reveal any disadvantage relative to engineers (cf. box p. 2). Moreover, it shows they have a real advantage over graduates with masters degrees, i.e. those who have completed 5 years' higher education.

The various *Génération* surveys (cf. box) show that the conditions under which the PhDs entered the labour market varied considerably, depending on their subject. Those with doctorates in mathematics, physics and engineering tended to be successful in obtaining employment on open-ended (i.e. permanent) contracts. Together with young social science graduates, they were

also the most highly paid (2,100 Euros net per month). On the other hand, those who had studied life and earth sciences and chemistry experienced real difficulties. This group had a higher unemployment rate three years after leaving higher education (16%), and those who did land a job usually found themselves on a fixed-term contract. Those with doctorates in law, economics and management saw their situations improve relative to that of their counterparts who received their PhDs in 2001. They were less likely to be unemployed or to be employed on fixed-term contracts. Finally, those who obtained doctorates in art and humanities in 2004 were less likely to be unemployed than those who obtained doctorates in 2001. Nevertheless, they are more likely to have been employed on fixed-term contracts in recent years and are the least well paid of all the PhDs (1,900 Euros net per month).

Three years after completing their doctorates, 41% of the PhDs were working in publicly funded research. Of those who had obtained their first jobs, 14% were employed as temporary research assistants. In addition, approximately one third of the PhDs said they had had at least one post-doctoral position during the three years following completion of their doctorates. This was particularly true of PhDs in chemistry and life and earth sciences. This seems to be a stage that all young PhDs wishing to work in academic research have to go through. It enables them to turn their doctoral training to good account by publishing academic articles, particularly in the hard sciences.

What has to be borne in mind is that, when they submit their theses, 70% of young PhDs aspire above all to work in academic or public research. However, only 40% of them manage to land a permanent job. In this sector, therefore, precarious employment remains the norm for them.

Thus it would seem to be a matter of urgency for young PhDs to have a clearly defined career plan (work in public or private research or elsewhere). This plan will determine the circumstances under which they complete their theses and, ultimately, their employment prospects and entry into the labour market. The choice of research institute, PhD supervisor and funding provider will prove to be important factors in their future careers.

It is better to have funding for a PhD

For several years, Céreq's research has shown that young PhDs' entry into the labour market depends largely on the circumstances under which their doctorates are completed. Apart from the discipline they choose, the funding and the type of research institute that hosts them are also factors that determine the success (or otherwise) of their entry into the labour market.

PhDs and engineering school graduates: similar academic and socio-demographic profiles

Comparison of the characteristics of engineering school graduates and PhDs in the *Génération 2004* database shows that their socio-demographic profiles are virtually identical. Although the PhDs as a group are more highly feminised than the engineers (41% and 25% respectively), they are much less so than the HE population as a whole. The social origin of young PhDs and engineers is the same. Within these two groups, about 50% have a father with *cadre* status or in one of the liberal professions and more than 80% of them have two parents of French origin. Comparison of their academic profiles shows that there are significant differences between the two groups. Thus a much higher share of engineering school graduates than PhDs passed the general baccalaureate with distinction (72% and 61% respectively). However, examination of the differences between engineering school graduates and PhDs in the hard sciences shows that the shares of young people with distinctions are similar. Naturally, more than 50% of the engineering school graduates spent two years in the demanding post-baccalaureate *classes préparatoires* before sitting the entrance examinations for the elite engineering schools (*grandes écoles*), whereas this applies to just a third of PhDs.

Those PhDs who were in receipt of a state research grant or who entered into industrial agreements for training through research concluded under the so-called CIFRE scheme tended to enter the labour market on better terms than average for young PhDs in general. Three years after completion of their theses, they were more likely to be in employment and less likely to be on fixed-term contracts.

The smooth entry into the labour market enjoyed by PhDs funded under the CIFRE scheme is due to the nature of the scheme, which requires doctoral students to carry out a large part of the work for their doctorates in firms. In many cases, the procedure for obtaining funding through an industrial agreement is similar to that for applying for a job or even a contract-to-hire: candidates have to set out their career objectives and provide evidence of their competences to the employers.

Nevertheless, two points need to be made here. Even though more and more applications are being made for funding under the CIFRE scheme, fewer than 10% of the doctoral students who obtained their PhDs in 2004 had been in receipt of such funding. Furthermore, for those who do obtain funding, the distribution by subject is very unequal.

Those in receipt of research grants (outside the CIFRE scheme) are also at an advantage in the labour market, albeit to a lesser degree. In most cases, they enjoy better conditions than other PhD students for carrying out their research (own office, affiliation to academic network, etc.), which may make their subsequent entry into the labour market smoother. Furthermore, since the number of grants is limited, it is, on the face of it, the better students at masters level who benefit from this type of funding.

The circumstances under which a doctorate is completed affect not only young PhDs' chances of finding employment but also the type of job they obtain. Among a group of PhDs with comparable personal characteristics, those funded under the CIFRE scheme are more likely to be employed in private research, while recipients of state research grants are more likely to find work in public research. By way of illustration, some 47% of PhDs who had received CIFRE funding were working in private research three years after submitting their theses, while 55% of those who had been in receipt of a state research grant were working in publicly funded research at the time of the survey. Among those who had neither CIFRE funding nor a state grant, just 17% were working in private-sector research and 35% in publicly funded research.

In response to the difficulties PhDs are experiencing in entering the labour market, the government has put in place measures

Methodology

At the request of the Departments for Higher Education, Research and Technology at the French Ministry of Education, Céreq has carried out five waves of surveys since 1997 on the labour market entry of PhDs. Two of them were carried out as part of the higher education surveys conducted in 1997 and 1999, while the other three are supplements to the *Génération 1998*, *Génération 2001* and *Génération 2004* surveys. They concern PhDs who obtained their doctorates in 1994, 1996, 1998, 2001 and 2004. The results presented in this issue of *Bref* relate solely to PhDs outside the health sector, who are of French nationality and who did not interrupt their studies for more than one year. The surveys also excluded PhDs aged over 35, since a very large majority of them were already in employment when they completed their theses. Thus the results presented in this edition of *Bref* relate to approximately two thirds of PhDs in France.

to bridge the gap between business and university doctoral programmes with a view to encouraging PhDs to work in the private sector.

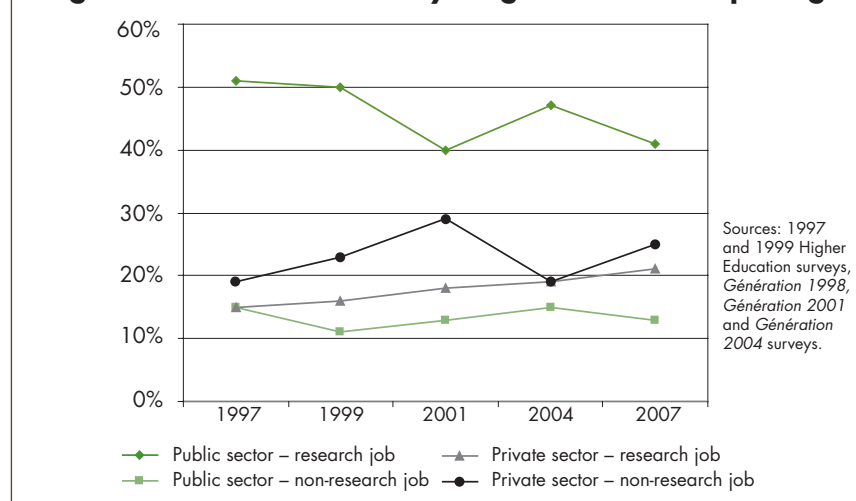
More PhDs are looking to the private sector

Following the measures put in place by the public authorities to encourage young PhDs to seek work in the private sector, three years after leaving the education system 47% of PhDs were working in the private sector in 2007, compared with 34% ten years previously (cf. Figure, page 3). In engineering, most of the jobs were in private-sector research, despite competition in this segment of the labour market from engineering school graduates. In law, economics and management, an increasing share of young PhDs are taking non-research jobs in the private sector.

Within the private sector, PhDs tend to be concentrated in research and development, with IT consultancy and engineering also providing significant numbers of jobs. Nevertheless, the collaboration between graduate schools and private-sector employers is not systematic. Recruiters are unfamiliar with the conditions under which doctoral research is carried out and theses completed. They have a rather stereotyped view of PhDs, whom they often perceive as 'overqualified' and not really

• The *Génération* surveys analyse the early years of young people's careers. Representative samples of an entire generation of young people leaving the education system in a given year are questioned.

Figure 1 • The evolution of young PhDs' career openings



Job satisfaction of PhDs

Job satisfaction	Public sector		Private sector	
	Research job	Non-research job	Research job	Non-research job
Feeling of professional fulfilment*				
Yes, absolutely	68%	50%	60%	54%
Yes, to some degree	24%	23%	32%	27%
Perception of job**				
Below your level of competence	13%	58%	19%	37%
Looking for job				
Yes	24%	42%	27%	28%
No	76%	58%	73%	72%
Median net monthly salary	2 000	1 900	2 400	2 000

* Question – 'Would you say your current job enables you to fulfil yourself professionally: Yes, absolutely; Yes to some degree; No, don't know?'

** Question – 'Thinking about this job, would you say that you are being used: at your level of competence; below; above?'

Source: *Génération 2004* survey.

operational in the short term. Similarly, surveys of PhDs also show that they do not have enough experience of business and the labour market to be able to make their way in the world of work as easily as graduates from other parts of the higher education system.

This is why training seminars aimed at improving doctoral students' employment opportunities and the CIFRE scheme may be mechanisms which, if developed further, may encourage the various actors to get to know each other better. Nevertheless, despite these initiatives, and some interesting career prospects, working in the private sector in areas other than research seems to be a second-best option for PhDs. This situation can be compared with what can also be observed in the public sector in areas other than research. While PhDs are not downgraded in terms of the positions they hold (they all have *cadre* (managerial) status), they do experience subjective downgrading. PhDs not working in research functions are more likely to state that they are employed below their competence level.

To conclude, the difficulty young PhDs experience in finding employment may be the result of several mechanisms: economic situation, competition from engineering and business school graduates, the circumstances under which the PhD was produced, number of vacancies in public research, academic discipline, etc. All these variables influence PhDs' entry into the labour market and employment prospects.

The recruitment criteria in the various sectors (private/public, research/not research) are not the same either. In academic research, the publication of articles and involvement in academic networks, as well as being the holder of a government grant, seem to be the criteria that are valued. In the private sector, the criteria for recruiting PhDs are based rather on participation in research projects and whether or not candidates were in receipt of CIFRE funding. However, right from the outset of their PhD programmes, doctoral students seem to have a career plan (e.g. public or private-sector research) that will determine the way in which they present themselves in the labour market and the type of job they will look for. These choices seem to be irreversible, which prevents young PhDs from switching from one sector to the other when they come to look for their first jobs. Thus PhDs who do not find the kind of employment they were expecting fail to make use elsewhere of the skills acquired during their time as doctoral students.

The government has put in place arrangements that are proving effective in supporting and diversifying PhD programmes (CIFRE scheme, training seminars) in order to facilitate labour market entry. What supporting measures are required in order to help those young PhDs who fail to find the type of job they were seeking find suitable alternative employment? This is a new challenge that doctoral programmes will have to meet. ■

Further reading

- *L'insertion des docteurs. Enquête Génération 2004. Interrogation 2007*, J. Calmand & J.-F. Giret, Net. doc, n° 64, 2010.
- Intégrer l'entreprise privée avec un doctorat. L'exemple de la branche ingénierie, informatique, études et conseil, A. d'Agostino, J. Calmand, N. Moncel, E. Sulzer & F. Lozier, *Bref*, n° 268, 2009.
- "The Increased Frequency and Duration of the Postdoctorate Career Stage", J. Ma & P. Stephan, *The American Economic Review*, 95, p. 71-75, 2005.
- De la thèse à l'emploi. Les débuts professionnels des jeunes titulaires d'un doctorat, J.-F. Giret, *Bref*, n° 220, 2005.

T&E n° 91 • January-February 2011

Newsletter on employment and training research from Céreq

Publications manager

Frédéric Wacheux

Editor in chief

Annie Boudier

Translation

Andrew Wilson

**Centre d'études
et de recherches
sur les qualifications**

10, place de la Joliette,
BP 21321,
13567 Marseille cedex 02
T 04 91 13 28 28

www.cereq.fr

Reproduction permitted
provided that the source is cited.

ISSN 1156 2366

Registration of copyright
2nd trimester 2011

Published free of charge

ministère
du Travail
de l'Emploi
et de la Santé



ministère
Éducation
nationale
supérieure
vie associative



www.cereq.fr