

Quality of Doctoral Education – Indicators derived from a longitudinal survey in Germany

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Research interest

In the context of the so called 'knowledge society', knowledge is seen as a key element for social and economic development. As a key player in the creation of knowledge, doctoral candidates and doctorate holders have been on the agenda of higher education policies for many years. In many European countries changes in the structure of doctoral education are under way (CHEPS 2002; Kehm 2009; Crosier/Purser/Smidt 2007). Governments have strengthened their efforts to improve educational systems of higher education across Europe in face of a growing competition for the brightest heads.

Special attention has been put on the question of how a continuous availability of doctoral candidates can best be achieved and how a high standard of quality in the system of doctoral education can be maintained (Wissenschaftsrat 2002).

In recent years, the system of doctoral training at German universities was accompanied by a number of changes targeting to improve the quality of doctoral education and the situation of doctoral candidates. The increasing emergence of structured doctoral programs and the integration of doctoral training in the Bologna Process have provoked a shift in perspective on the traditional doctorate (Hornbostel 2008). Today, the traditional system of graduate education at German universities is complemented by a diverse range of coordinated programs responding to recommendations by the German Science Council (Wissenschaftsrat) to strengthen international and interdisciplinary standards (Wissenschaftsrat 1986, 1989, 1997, 2002).

Only little is known as yet about the effects of structured doctoral programs on research training conditions and the overall quality of doctoral training, while at the same time the need for quality assurance and performance measurement instruments is growing. This is due to the poor availability of empirical data on the situation of doctoral candidates up until now. Recent attempts aiming at measuring aspects of quality in doctoral training were based on cross-sectional surveys only. Our aim is to present an instrument to monitor research conditions and career paths of doctoral candidates and doctorates on a continuous basis using longitudinal data.

Method and data collection

The Institute for Research Information and Quality Assurance (iFQ) in Bonn, Germany, has begun a longitudinal survey on doctoral candidates (ProFile). The project has started by addressing the question of whether the introduction of structured doctoral programs at German universities is changing the career patterns of doctorate holders.

The instrument is designed to generate a broader set of indicators to assess the quality and impact of the newly emerging structured doctoral programs. It has been designed as a three-wave panel study

and will be carried out through online surveys. The first wave covers the situation at the beginning of the doctoral training. Besides the educational biography of the candidates, we focus on characteristics of the admission process, ways of financing, and the quality of coursework, mentoring and supervision. The second wave will cover the situation at the end of the doctoral training and will be used to collect data on academic achievements during the doctoral phase (participation in conferences, publications and final grades). Furthermore, the second wave will provide information on skills and competences that have been generated, on experiences of international mobility and occupational preferences, as well as information on how personal networks are evolving during doctoral training. The third wave will take place around three years after graduation and will aim to analyse the occupational career patterns and the influence of doctoral training on them. Further surveys will be carried out annually during the doctoral phase to generate information on the current status of doctoral training, research conditions and to control for changes over time. Data will be collected on how satisfied candidates are with their supervision and with the training that was delivered. The evaluation results obtained from the indicators will be made available to participating institutions (universities and science-funding bodies).

Currently the sample consists of doctoral candidates at two large German universities, scholarship holders of the German National Academic Foundation and doctoral candidates funded by the German Research Foundation (Research Training Groups and Collaborative Research Centers). The instrument is designed to allow for a continuous inclusion of further universities and institutions of higher education into the sample at any moment. In 2010 doctoral candidates of the Graduate Schools established by the German Initiative for Excellence will be added to the sample.

Indicators generated by ProFile

Indicators that can be developed from the instrument ProFile can be categorized in three types:

1) Indicators of quality measurement: With regard to doctoral education at German universities, the need of institutions of higher education for information about the quality of their doctoral training is constantly growing. We measure the quality of doctoral training by satisfaction with various aspects of doctoral training (supervision, mentoring, coursework, available resources). Also, we will be able to monitor if supervision and mentoring agreements are stable over time and if the supervising committee abides by the agreement. The quality of the coursework offered is measured on the basis of personal satisfaction as well as on the basis of an evaluation by the students on what type of coursework should be promoted more strongly. To the participating institutions it will then be reported to what extent certain types of coursework should be further extended and what types of coursework should play an less important part in the curriculum.

2) Indicators of labour market outcome, performance and scientific output: The success of different frameworks of doctoral education will be measured on the basis of (1) career development, (2) scientific indicators such as publications, scientific prizes, and (3) other benchmarks, such as time to degree, phases of discontinuation and grades. Publications and other scientometric indicators will be captured using the iFQ-“Research Monitor”, a web-based input interface for classical indicators of scientific performance.

The analysis of labour market success of alumni as an indicator in the evaluation of university training programs is already well established internationally (Ewell 2005). However, benchmarks of labour market success typically used in alumni studies (time to first job, occupational adequacy, phases of employment, income, etc.) are measurements only partly suitable to evaluate the success of the doctoral training. Since it is believed that doctorate holders usually face lower risks of unemployment, part-time employment and atypical forms of labour, they are more likely to be found in stable employment (Teichler 2000). Still, it has been argued that structural changes in the labor market for higher educated have lead to more flexibilised forms of labor contracts in and out of academia in

Germany (Enders 2001). Within the European framework, growing concerns that academic careers seem to become more risky in many European countries (Teichler 2006; Liberali 2006) have been accompanied by assumptions that structured professions have been eroded and traditional scientific scholarly careers have been reconfigured as a consequence of massification of higher education (Scott 2006). Further benchmarks, such as publication activity, and other scientometric indicators, will be used to evaluate the degree to which doctoral programs succeed in selecting the “best heads”.

3) Indicators of human resources: The third type of indicators deals with measuring the attractiveness of a research career in Germany, paying special attention to candidates in structured programs. Since in the European context S&T-indicators focusing on human resources in R&D aim to monitor developments on the basis of labor force participation (EU 2008:47), our aim is to identify changes on the basis of occupational preference and preference for work activities among doctoral candidates from different funding-programs at different stages in their doctoral phase. Growing competition among institutions of higher education have imposed pressure to individuals to produce valuable output (publications), yielding a “tournament” among scientists in some fields of research (Freeman/Weinstein/Marincola/Rosenbaum/Solomon 2001). Today it is widely accepted that the growing emphasis of the market in research and the diminishing “blue-skies” research has formed beliefs and academic identities of young researcher (Henkel 2004; Scott 2006). How this is affecting occupational preferences of young researchers and the attractiveness of the research career has become an important question. We particularly investigate the attractiveness of various types of work activities (research, development, teaching, management, administration, service and arts) at the beginning of the doctoral phase.

Comparable approach

The indicators generated by the instrument serve to undertake comparisons of doctoral frameworks in different national and international contexts. Especially the third wave of the panel-study will allow for the comparison of labor market outcomes of German doctoral candidates with other European contexts. We investigate labour market outcome on the basis of the ISCO, type of employment status, and other indicators comparable to national labour market statistics and the OECD/UNESCO-Project “Careers of doctoral holders” (CDH) (Auriol/Felix/Fernandez-Polcuch 2007).

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