Do we need incentives for PhD supervisors?

Dieter Sadowski, Peter Schneider, Nicole Thaller
IAAEG, Universität Trier, D 54286 Trier, Allemagne ;
sadowski@iaaeg.de; www.iaaeg.de

Abstract: Our paper presents empirical results of explorative case studies that examine whether the New Public Management mechanisms have improved the academic performance of PhD education in selected German and European economics departments. Our data relies on document analyses of organizational variables and in-depth semi-structured interviews with professors in Germany and several European countries. We propose a typology of departments along their dominant goals and suggest that organizational improvements should look at determinants that solve long-term incentive problems and overcome the local collective good problems of doctoral education.

1 Background

In the early 90s, almost all European countries viewed their doctoral programs as falling short of the primordial objective of doctoral education: to qualify young academics to do original research on their own. Given that diagnosis, in many countries initiatives were taken to
change this dismal situation, with the PhD education of American research universities generally serving as the model. These initiatives often achieved visible success. German universities, however, are latecomers in this process, and in this paper we ask why that is the case. Are German governments – Bund as well as Länder – and university leaders still confident in their traditional education? Where there are reform efforts, are they too weak and only meant to give the appearance of a “modern” education? Are the central actors, politicians, university decision makers, and individual professors, serious in their intentions, but ignorant of the decisive features of successful scientific education? Or do German universities simply not command enough resources to produce internationally competitive PhDs?

The competition for good programs is not just a yardstick competition entertained by an interested public, but it is a real competition for the best doctoral students. Their mobility alone enforces “American” standards even for non-US programs, yet political intervention (Leszczensky/Orr 2004) may intensify the pressure for reforming the traditional, highly individualistic master-apprenticeship model of doctoral education.

Each and every university, or rather each department, has to face these pressures and to decide whether to enter the competition for a strong research orientation and the best young academics. In Germany the situation may even become dramatic, as the Wissenschaftsrat (2006: 56) suggested prohibiting non-performing departments from awarding doctoral degrees in the future, thus losing the traditional criterion of university education.

The action to be taken is a matter of the preferences or interests of the relevant decision-makers and, of course, depends on the resources that are or can be made available. In the short run, the scientific competence of a department’s professorship is a given and it may be a binding constraint for all reform efforts; in the long run, it may be changed by recruiting different personnel. Adding additional personnel either to do the doctoral education or to free the research-prone professors in a department from elementary teaching or administrative tasks requires investments and their financing, but first of all a majority within the department to follow a new path. Cooperatives are well known for their difficulties to act strategically in a competitive market. James and Neuberger (1981) consider the university department as a non-profit labour cooperative while Backes-Gellner (1989) analyses this concept economically. How then do some departments master the restructuring, while others adapt only pro forma – if at all?
In this paper we report on an ongoing explorative study of economics departments that have changed their doctoral education with varying degrees of success. We pursue three objectives: We attempt to identify the PhD production technology of the more successful units (Breneman 1976) and the different resource requirements being perhaps its concomitant. We compare the perceptions, attitudes, and interests of professors either to maintain a competitive program or to engage themselves in a turn-around or planned organisational change. We search for the organisational preconditions for change, and, more specifically, we ask whether basic change depends on outside incentives or regulation or whether a department can possibly “cure itself”. The relative importance of exogenous or endogenous causes of change must be interesting for policy-makers trying to abolish or at least to modify the traditional academic self-administration in the spirit of the New Public Management (Grüning 2000, Schedler/Proeller 2000, Schimank 2005).

2 The Study Design

We focus our argument on economics departments and investigate some German and similar European universities. Even a superficial comparison shows that different departments show different degrees of activity and of success in doctoral education and postdoctoral education (Wissenschaftsrat 2002). Schlinghoff (2002) and Welsch and Ehrenheim (1999) demonstrate that more than one third of all German economics professors received their doctoral degree in only six German departments. That aspect shows a strong concentration of departments and that concentration even increases when one limits oneself, as we do, to young doctors entering the academic profession (Fabel/Lehmann/ Warning, 2002; Mayer, 2001). Ideally, we would like to collect output variables on the quality of the doctoral dissertations and possibly the value of later scientific contributions that could be accorded to the doctoral education. Pragmatically, we have to be content with placement ratios as performance indicators: share of doctoral students entering an academic career (in universities or research departments) – “success” means the placement of their graduates in an academic career (Burris, 2004). For the input variables we suppose that the scientific productivity of potential supervisors is at least one necessary condition, the potential of the incoming students being an important second one. Other factors may have a strong impact or may even be also necessary: an interest to engage in doctoral education as well as the freedom and resources to do so, in other words, a professional self-understanding and status of professors who consider doctoral
education as essential. These circumstances in turn hinge upon organizational processes as intervening variables: Are decisions taken to invest resources into doctoral education? Is the recruitment of professors geared towards academic excellence? Are doctoral students selected according to their academic potential as opposed to their service quality, for instance? Is the discretion of the single professor limited in favour of an organizational mission, backed either by self-regulation or by managerial incentives or rules?

2.1 Sample

For the study we have so far investigated 13 theoretically pre-selected economics departments in Germany, Switzerland, Italy, Great Britain and The Netherlands to do explorative case studies. We chose The Netherlands since their economics departments have a better reputation than the best German economics departments (Combes/Linnemer 2003; Lubrano/Bauwens/Kirman/Protopopescu 2003). They started to reform their graduate education around the same time as Germany, in the early 1990s, yet they seem to be much more successful. With the introduction of the Research Assessment Exercise, universities in Great Britain are in competition for public research funds, which made us curious to investigate whether and how departments changed the research production process and which mechanisms lead to successful PhD education. Also we went to Switzerland since elements of structured graduate education there are centralized in one national centre for all Swiss economic departments. We wanted to include departments that are active in doctoral education without always knowing in advance whether they would strive for academic excellence or just for acceptable outcomes. In addition, our theoretical sample should include more or less research active departments as we understood this to be a vital precondition for a successful engagement. We also tried to identify departments that follow different technologies and reach different results.

In American research universities, the production of economics PhDs is to a certain degree centralized and standardised, while the traditional apprenticeship model of one-by-one interaction is highly individualistic and unstructured. More or less centralized Graduate Schools or departmental Graduate Centres manifest a managerial style of governance with standards that the single professor has to accept: standards with regard to the selection of students, the core curriculum in the first years, or the process of matching students and supervisors. At the same time the centre often secures scholarships and provides administrative support with regard to selection.
Our selection of departments along these dimensions was based on the statistics provided by Wissenschaftsrat (2002), Combes and Linnemer (2003) and Winterhager, Schwechheimer and Weingart (2001). As apt for theoretical samples, we wanted to realise a strong variation of types. Our data come from document analyses (doctoral regulation, curricula vitae of professors, or websites and brochures about doctoral programmes), bibliometric analyses, and interviews.

The bibliometric analyses of published articles serve to measure the research activity of professors and PhD graduates. We opted for the Scopus database instead of the better known Web of Science or Econlit since it does not favour American literature as much as the letter ones and has longer citation periods. An additional strength of Scopus is that is is a worldwide bibliographic database. It encompasses more than 14000 titles from natural science, technical science, medicine, and social science. It is possible to select the 2700 titles from social science. Another argument to use Scopus is the possibility to conduct publication and citation analysis for more than two decades. With Econlit only a publication analysis is feasible. All titles recorded in Scopus are peer-reviewed ensuring the measurement of qualitative publications instead of just counting numbers. To identify economics professors in the departments we relied on work by Rauber and Ursprung (2006: 22). They had German economics departments to indicate the names of their economics professors. So we used their list and corrected the names for the year 2005. For the international sample we were able to track economic professors through the departments’ websites1.

We initiated guided interviews with professors of the sampled departments to reveal their attitudes, the different organizational conditions in which they work or at least in which they see themselves, their method of doctoral education, and the contribution of their department’s education to scientific progress. For each department, the first request for an interview was directed to at least one professor known to us from our research networks; via snowballing they helped us to other contacts, usually to professors with an above average interest in

1 For our search in Scopus we used the surname and the first letter of the first name. If such a name combination creates results for more than one person, it is possible to continue search processes by typing in one or more of a professor’s affiliation. We tried to avoid this procedure as it may swallow up several search results. Some of the encountered difficulties were caused by differently written names of the same professor. Some difficulties arose while collecting the data of the identified faculty. It was not possible to receive information for all professors. Kürschners Deutscher-Gelehrtenkalender (2005), Who is Who (2004), and the register of members of the Verein für Socialpolitik (2000) were queried to complete data from the internet. We had to handle missing values for some variables like ‘age’ or ‘stays in the United States’ if a professor’s curriculum vitae was not in the internet. Requesting the dean’s offices to complete the missing pieces of data was forwarded to the concerning persons. Unfortunately, they often refused to send their curriculum vitae or similar information.
doctoral education. It is not clear to us whether this causes a bias in answers, because strongly engaged persons could have a tendency to overestimate the impact of their activities, but they could also be frustrated in view of limited support within their organisations. One suspicion however can be cleared right from the beginning: The professors of a particular institution never contradicted each other, but rather complemented our picture of the respective department. We therefore do not distinguish interview partners, but only economics departments. In our interviews we used a semi-structured questionnaire with open questions that covered our organizational research topics. But we were also open to institutional specialties and added case related questions. Pre-testing the questionnaire with professors of one department we learnt that the reality in collegial organizations cannot be captured adequately with a non-reactive questionnaire. A trustful interview atmosphere is required to induce professors to confide in interviewers. So far, we have interviewed 40 professors at nine German and four European economics departments. For the current analysis we pool the data. Each interview lasted approximately one and a half to two hours. The interviews were recorded and transcribed. The interviews took place during May 2005 and October 2006. The departments are named D1, D2,… D13. Because of sensitive data we ensure both our interview partners’ and the investigated departments’ anonymity.

We have to concede that we were not able to watch the time structure of PhD production correctly. Our interviewees reported the current state of doctoral education, but not necessarily the performance levels of the recent past. The assumption that the educational program may not have changed over time is heroic given many a recent reform effort.

### 2.2 Organizational characteristics

Table 1a provides some descriptive statistics about our sample for the periods 1999-2000 and 2000-2005 respectively. It gives absolute and relative performance information and three hints of possible causes to explain the differences. The total number of PhD degrees awarded in the departments spans from 3 to 27 per year (column 2); the total number of economics degrees

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2 We distinguish between department and Faculty. Faculty is the wider institutional unit of business studies whereas department comprises only the subunit of economics – excluding Business Administration.

3 Missing data in table 1 is indicated by dashes
professors (size departments) in each department spans from 6 to 26 (column 3); column 4 indicates the total number of professors actively supervising doctoral students. In the majority of the departments all professors belonging to one department supervise doctoral students but the figures also vary: in one department (D3) it is only one out of six. Then we use as a first productivity measure the ratio of awarded PhDs per professor (column 5), it spans between 0,3 to 3 granted PhDs per professor per year; as research productivity the number of Scopus articles per professor in the period 2000-2005 (column 6). The average research productivity of professors varies enormously between 13,4 and 0,1 articles over a five-year period, indicating that we succeeded in a sample with high variation. The seventh column represents scientific visibility measured in citations gained by bibliometric analysis through Scopus database for each professor’s career.

Table 1a: Departmental characteristics - details 1

<table>
<thead>
<tr>
<th>Department</th>
<th>Total PhD</th>
<th>Size department</th>
<th>Supervisors</th>
<th>PhD/professor</th>
<th>Articles/professor</th>
<th>Citations/Prof</th>
</tr>
</thead>
<tbody>
<tr>
<td>D10</td>
<td>-</td>
<td>12</td>
<td>12</td>
<td>-</td>
<td>13,4</td>
<td>216</td>
</tr>
<tr>
<td>D1</td>
<td>3,5</td>
<td>10</td>
<td>10</td>
<td>0,35</td>
<td>5,4</td>
<td>41</td>
</tr>
<tr>
<td>D11</td>
<td>13</td>
<td>26</td>
<td>26</td>
<td>0,5</td>
<td>8,1</td>
<td>-</td>
</tr>
<tr>
<td>D3</td>
<td>-</td>
<td>6</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>D9</td>
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<td>10</td>
<td>0,53</td>
<td>4,9</td>
<td>60</td>
</tr>
<tr>
<td>D12</td>
<td>22,5</td>
<td>24</td>
<td>-</td>
<td>0,93</td>
<td>7,7</td>
<td>-</td>
</tr>
<tr>
<td>D2</td>
<td>-</td>
<td>11</td>
<td>6</td>
<td>-</td>
<td>1,5</td>
<td>5</td>
</tr>
<tr>
<td>D13</td>
<td>11,5</td>
<td>15</td>
<td>15</td>
<td>0,7</td>
<td>4,9</td>
<td>-</td>
</tr>
<tr>
<td>D4</td>
<td>3</td>
<td>10</td>
<td>10</td>
<td>0,3</td>
<td>7,5</td>
<td>23</td>
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<tr>
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<td>9</td>
<td>8</td>
<td>8</td>
<td>1,13</td>
<td>4,1</td>
<td>14</td>
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<td>7</td>
<td>11</td>
<td>11</td>
<td>0,64</td>
<td>3,6</td>
<td>13</td>
</tr>
<tr>
<td>D7</td>
<td>27</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>2,1</td>
<td>8</td>
</tr>
<tr>
<td>D8</td>
<td>4,5</td>
<td>9</td>
<td>9</td>
<td>0,5</td>
<td>0,1</td>
<td>0,1</td>
</tr>
</tbody>
</table>

In table 1b the second column shows the average number of PhDs by the department placed in universities per year over the period of 1999-2000. It spans between 0,5 to 12,5 graduated PhDs being placed; the third column shows the ratio of PhD graduates placed in academia in
relation to all graduating PhDs per year (1999-2000). The ratio spans from 0.05 (5% of all PhD graduates went into academia)\(^4\) to 0.75 (75% of all PhD graduates went into academia). The fourth column contains the ratio of academic placements per professor and year (1999-2000) and reaches from 0.06 placements to 0.5. The last three columns inform about technical and cost conditions of the PhD production. Column 5 states the average duration of successful PhDs; column 6 represents the selectivity of the program by giving the relation of applications to accepted candidates. For column 7 we constructed an index number to catch the opportunity costs that a professor has to incur when he engages in doctoral education. The index is based on three strain variables and three financial variables, it may vary between 12=highest costs and 0=no costs and spans from 2 to 8.

We presume that it demands more strain if supervisors have to add PhD teaching time on their regular teaching load without compensation. If a supervisor gets discount on his teaching load because of PhD education, then we assign a “0” which means “less effort”. If PhD education is part of regular teaching, then we assign a “1” because the effort remains unchanged when engaging in doctoral education. If the PhD education is added on the regular teaching load, we assign a “2” because the PhD education demands extra effort. The second variable comprises the number of PhD students to be supervised with more students demanding higher effort. We have three categories ranging from “0” which means little effort and set the threshold for two PhD students for each supervisor and less. Then there is an effort level “1”, if supervisors have more than two but less then five PhD students, and a high effort “2” if supervisors have 5 and more PhD students. The third variable examines PhD students as teaching assistants and therefore taking teaching load presumably of the supervisor. “0” is assigned if PhD students do more than 2 hours of teaching per week, “1” if PhDs teach up to 2 hours per week and “2” if they are not requested to teach. The second set of opportunity cost variables reflects financial burdens on the supervisors as a consequence of PhD education. The fourth variable assigns “0” if the salaries of the PhDs are not paid out of the supervisor’s budget. “1” will be assigned if the payment ranges from 1% to 99% of the budget and “2” will be assigned if the supervisor fully covers the salary for the PhD. The fifth variable assigns “0” to the effort level if participation at conferences is paid for by the supervisor only once during the PhD period. “1” if it is not more often than once per year and “2” if it is more often than once per year. The sixth variable assigns “0” if the supervisor does not have to finance a computer for the PhD student, “1” if a computer will be shared by several PhD students and “2” if every PhD student receives his own computer. So at the entire effort level can range between “0” for no extra effort to “12” for high extra effort. We only report the overall index per department.

\(^4\) We drew the variable from various sources (Wissenschaftsrat 2002; Berghoff/Federkeil/Giebisch/Hachmeister/ Siekermann/ Müller-Böning 2005) and did our own research and calculations.
Table 1b: Departmental characteristics - details 2

<table>
<thead>
<tr>
<th>Department</th>
<th>PhD in academia</th>
<th>Placement pro PhD</th>
<th>Placement pro professor</th>
<th>Duration (years)</th>
<th>Application/ Acceptance rate</th>
<th>Opportunity costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>D10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3-4</td>
<td>0,02</td>
<td>6</td>
</tr>
<tr>
<td>D1</td>
<td>2</td>
<td>0,57</td>
<td>0,2</td>
<td>4-5</td>
<td>0,06</td>
<td>7</td>
</tr>
<tr>
<td>D11</td>
<td>9</td>
<td>0,69</td>
<td>0,35</td>
<td>4-5</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>D3</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>&gt;5</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>D9</td>
<td>6</td>
<td>0,75</td>
<td>0,4</td>
<td>4-5</td>
<td>0,1</td>
<td>7</td>
</tr>
<tr>
<td>D12</td>
<td>12,5</td>
<td>0,56</td>
<td>0,5</td>
<td>&gt;5</td>
<td>0,19</td>
<td>2</td>
</tr>
<tr>
<td>D2</td>
<td>1,5</td>
<td>-</td>
<td>0,12</td>
<td>3-4</td>
<td>0,08</td>
<td>8</td>
</tr>
<tr>
<td>D13</td>
<td>4</td>
<td>0,38</td>
<td>0,2</td>
<td>4-5</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>D4</td>
<td>0,5</td>
<td>0,08</td>
<td>0,01</td>
<td>3-4</td>
<td>0,05</td>
<td>8</td>
</tr>
<tr>
<td>D5</td>
<td>2</td>
<td>0,22</td>
<td>0,25</td>
<td>4-5</td>
<td>0,05</td>
<td>7</td>
</tr>
<tr>
<td>D6</td>
<td>1</td>
<td>0,14</td>
<td>0,09</td>
<td>4-5</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>D7</td>
<td>1,5</td>
<td>0,05</td>
<td>0,17</td>
<td>4-5</td>
<td>-</td>
<td>7</td>
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<tr>
<td>D8</td>
<td>0,5</td>
<td>0,08</td>
<td>0,06</td>
<td>&gt;5</td>
<td>-</td>
<td>7</td>
</tr>
</tbody>
</table>

2.3 Production technology and placement success

We chose our original sample according to the production technologies of PhD education: traditional apprenticeship models on the one side, and on the other hand side directed programs like graduate schools, graduate centres, research training groups etc. But we learned that the border between these types is not as clear as we anticipated. In particular, for program-like PhD production there is a huge intra-model variety of organizational variables and production methods. It is more sensible to distinguish unstructured education, which would represent apprenticeship models, and structured education, represented by the diverse program types. One trend emerges: all departments which focus on the role of PhD graduates in professorial and educational process routines rely on unstructured education. And all departments except for one (D10) which pursue the goal of improving PhD education or striving for academic excellence rely on more or less elements of structured education (cf. paragraph 3.1 below).
Structured and unstructured programs not only differ in their curricula, but typically rely on different ways of selecting candidates, matching students with supervisors, the average ratio of students per supervisor, integrating the becoming scientists into the scientific community, time to completion and the way to finance their PhD students.

2.3.1 Selection

In unstructured programs PhD students are often selected on a local basis. They are selected according to their visibility and their academic results during their bachelor or master studies, but also with regard to their co-worker qualities or perhaps the liking of one professor. Less so in structured programs, where programs are often internationally advertised and students are selected in an anonymous way on the basis of formal criteria, such as language and mathematical test results, rather than informal criteria.

This pattern translates astonishingly directly in different placement results. The three departments with the strictest selection policy for their PhD students (D11, D12, D1) are among the four highest ranked departments in figure 1a - 1c. The selection in the other departments is rather guided by informal processes and PhD students can easily move from a position as a research assistant to a member of a PhD program and therefore evade strict selection procedures.

2.3.2 Matching between graduate students and their supervisors

In the unstructured apprenticeship-model an individual professor, “the doctor father” chooses his or her apprentices at the very beginning. In general their relationship is informal and often displays a high degree of dependency on efforts by the PhD candidate; there may be a threat of “exploitation”. Structured programs, on the other hand, allow time for courses, during which both professors and students can get acquainted with each other and then choose the best possible fit. Structured programs often foresee several supervisors, thus easing the change of supervisors.

Again, four out of the five most successful departments (D11, D12, D1, D13) as can be seen in figure 1a -1c carry out this kind of matching procedure. In the beginning, PhD students are treated collectively, later a gradual, possibly multiple matching of students and supervisors takes place. The other six departments still rely on the traditional matching procedure.
2.3.3 PhD/professor ratio

Our interview data leave no doubt: The five successful departments operate with a much smaller ratio of PhD students per professor (table 2a column 5) while having much higher placement per professor ratios at the same time (table 2b column 4) than do less successful departments, presumably emulating an essential feature of the American model (Hilmer/Hilmer 2004). The ratio of PhD students per professor in the five less successful departments is almost twice as high than in successful departments (figure 1a - 1c) and the ratio of placement per professor is almost three times as high for successful departments.

2.3.4 Integration into Scientific community

Part of being prepared for an academic career is the early integration of PhD candidates into the scientific community, i.e., to learn the state of the art outside and to build up networks. Such socialization can happen in manifold ways: relying only on the local supervisors, through invitations of prominent guest speakers or through conference attendance. The departments in both clusters take different approaches to the integration of PhD candidates.

Four out of the five successful departments of figure 1a - 1c (D11, D12, D9, D13) hardly ever finance the attendance at conferences or external seminars for their PhD students and expect them to be invited or compete for scholarships. The other departments either finance attendances out of a budget by the individual professors or have already certain travel expenses for PhD students in their program funds. Yet both groups invite guest speakers on a regular basis, apparently a common endeavour for each department.

2.3.5 Completion Times

It is usually claimed that structured PhD education takes less time. Our interviews however show a different picture. Four out of the five successful departments (D1, D11, D9, D13) certainly do not have a shorter completion time. Our interview partners actually emphasized that the time to completion often takes longer than communicated officially.

The interviews draw a distinct picture for the less successful departments. For this group, in departments with unstructured education as well as in departments with structured education a variance in duration exists from three years up to five years. For the latter ones which consist without exception out of German departments always two parallel production methods exist at the same time at the same departments: An apprenticeship model as well as some form of
structured education. Our interview partner stated that time to degree is usually up to one year shorter in their structured PhD program than in the traditional education process.

2.3.6 Financial aid

It seems plausible to assume that it is easier for graduate students to focus on their education when their basic needs are financially secured. Next to the possibility to get paid through working contracts, scholarships are a common method to finance PhD students. Yet the scholarships by the German Research Foundation seem to be too low to attract graduate students (Bondre-Beil 2006: 30), which might explain why 19% of all graduate students with scholarships indicate a switch to better financed positions after 14 months (DFG, 2003: 30). In our interviews we found a wide variety in the level of financial aid. It varies from working contracts with a full salary to rather modest scholarships that only some students can acquire and only through competition with their peers. For the departments with a structured education no clear pattern emerges: One department grants equally – high – scholarships to each PhD student in their graduate school (D1), one concludes a mix between working contracts with regular salaries as well as scholarships (D9) and one relies on competition processes in granting scholarships (D11). Only one clear pattern exists for departments conducting unstructured – apprenticeship – education: they grant regular working contracts and they do not rely on scholarships.

3 Educational goals: shared missions?

Production technologies are not randomly chosen. Our interviews suggest that the means to become excellent are consciously selected on the basis of a shared dedication of the majority of professors within a department. From an organizational viewpoint our interviews indicate that departments decide for the organizational structure and PhD production methods and operating procedures that they think best fit their goals and financial reality.

The research activity and success of supervisors may be thought of as a vital, even technical precondition for any successful PhD program (Toutkoushian/Dundar/Becker 1998). We checked this hypothesis in order to establish the room for decision alternatives.
3.1 Departmental Goals

Our respondents do not always share the goal of academic excellence, not even in the interview situation, where we expected at least lip service to this objective. We distinguish three groups of departments, each with its own, commonly shared goal.

Departments with a strict target of academic excellence (D11, D1, D10), departments that show some interest in improving their PhD education, but without striving for academic excellence (D3, D9, D12, D13, D4, D5), and finally departments that are first of all concerned with the department’s daily routines—general teaching, administration and research projects—and for which academic excellence is not among their primary concerns (D6, D7, D8).

Within the group striving for academic excellence, the PhD production varies. Two departments (D11, D1) favour a structured education. The selection of the best candidates is carried out by a board. Scientific education takes place in standardised courses. Matching between PhD and supervisor occurs after both parties were able to know each other. They favour a low PhD/professor ratio and have PhD completion times of four years and beyond.

The third department (D10) rather follows an unstructured education process, PhD candidates are individually chosen by a professor. Scientific education and socialization is done as training on the job, as students and supervisors work together closely and depend on each other from the first minute with high dependency of the PhD on the supervisor. Their labour contract has to be renewed each year; completion times are on average less than 4 years.

The departments pursuing the improvement of their PhD education share the goal of raising the level of economic education among their PhD students, with academic placement being more a side-effect than a goal. All these departments have a structured PhD program, sometimes as a graduate school, sometimes as a graduate centre. Their selection procedures vary widely from very rigorous (D13) to flexible conditions (D5), but they all put a high effort on optimal matching. The ratio of PhD/professor ratio varies, the mean being larger than in the first group. The PhD completion time varies from three (D2, D4) to well over five years (D12).

The departments focusing on the daily routine consider PhD education as a function to keep the department running. PhD candidates are usually selected by the supervisor-to-be based on undergraduate studies results, be it seminar papers or final grades. The number of PhDs per professor is limited by budget constraints or contract length of research grants, the same holds for completion times. These departments all pursue an unstructured PhD education and favour the traditional apprenticeship model.
3.2 Placement with regard to publications and PhD graduates per faculty member

Figure 1a: Placement with regard to publications and relation of PhD to professor

Legend: Grey bubbles: educational goal, white bubbles: science goal; black bubbles: process routine; y-axis: academic placement (according to table 1b); x-axis: total amount of article publications per professor; size of bubbles: relation of PhDs per professor (both according to table 1a). Because of lacking data not all thirteen departments from tables 1a to 1c can be depicted in the figure.

As can be seen from figure 1a there seems to be a positive correlation, but it is not close to one, at least not in our sample. None of our sample departments with few publications has a high placement ratio (D8, D7), but there are also very research active departments (D4) with low placement success. The most research active departments (D11, D12, D1) do not have the highest placement ratio (D9). We take these findings as a hint to look for intervening organisational variables.
3.3 Reward structure and costs

What explains the different departmental preferences or goals?

3.3.1 Rewards

According to our interviews, the departments with academic excellence as major goal are not directly financially compensated for the number of PhD graduates. Rather the placement of their graduates and their future career determine their reward. The reference system for academic excellence is the peer group, the rewards are gained through reputation and better career opportunities. It seems plausible that supervisors pursuing academic excellence have an interest in competing for the best graduate students for co-authorship and therefore elevated reputation. Yet we found different politics for co-publications between supervisors and PhD students. In one department (D10) co-publications are favoured to motivate graduate students to conduct research whereas in another department (D11) co-publications are forbidden. But this strategy does not depend upon the goal orientation or production method.

Monetary incentives for each faculty member of any of these three departments to engage in PhD education lie in better future career opportunities, including higher remunerations. But even disregarding long-term monetary motives (Prendergast 1999), the prestige gained by successfully placing PhDs within the reputational hierarchy of institutions (Burris 2004, Frey/Osterloh/Benz 2001) has its own value in a competitive world (D11, D1). The spirit of competition can also be part of the self-concept of supervisors (D10), creating constant comparisons with departmental colleagues and the scientific community and also between PhD students, the high pressure perhaps being one of the causes leads to apparently high effort and excellent research.

Financial or advanced academic career opportunities through PhD education are also incentives for departments pursuing improvements in economic PhD education and lead to success in PhD placement (D12, D13). Such competition is sometimes explicitly regulated through advancement in the career hierarchy within the departments. Although German governments (Länder) have established detailed incentive systems for PhD education and other academic goals since the end of 1990s, our interview partners indicate that these incentives are so marginal, when it comes to PhD education, that they are unknown, in any
case not influencing behaviour. Budgetary rewards never reached departments or single faculty members in German departments.

3.3.2 Cost Considerations

The individual professor’s engagement is not only dependent on the rewards he or she can internalise, but also on the costs to do so. Figure 1b pictures the results of column 6 of table 1b and demonstrates the indicator of these individual (opportunity) costs. The more of these unavoidable costs are borne by the department, the less this cost burden weighs on a single professor. His or her burden decreases with the size of the department.

Figure 1b: Placement with regard to opportunity costs and publications

Legend: Grey bubbles: educational goal, white bubbles: science goal; black bubbles: process routine; y-axis: academic placement; x-axis: opportunity cost to provide PhD education (both according to table 1b); size of bubbles: total amount of articles by each professor in the years 2000-2005 (see table 1a). Because of lacking data not all thirteen departments from tables 1a to 1c can be depicted in the figure.

One could imagine that professors active in research do not want to be distracted by other activities, such as the obligations of doctoral education. Yet it seems also reasonable to suppose that research active professors draw a particular delight out of working with and
influencing the young generation in their discipline. As an intervening variable we therefore take the publication by each professor in the department (column 5 table 1a) into account. It is depicted by the size of the bubbles of figure 1b. One can easily see the correlation between low opportunity costs and high placement: low opportunity costs seem very helpful in high placements. But this again is only half of the story since two departments display high placement success (D9, D1) despite high costs. The professors of this two department have very diverse academic networks nationally and internationally, according to our interview partners far more than the other departments. This leads to the presumption that imposing administrative and teaching obligations on professors or restricting their budgets impedes academic placement of their PhD students. But this effect is moderated through widespread academic networks that smooth this disadvantage and compensate for the costs by elements of the networks.

Figure 1c: Placement with regard to department size and total number of PhDs

Legend: Grey bubbles: educational goal, white bubbles: science goal; black bubbles: process routine; y-axis: academic placement (according to table 1b); x-axis: total number of professors; size of bubbles: total amount PhD graduates per year (both see table 1a). Because of lacking data not all thirteen departments from tables 1a to 1c can be depicted in the figure.
Department size may well have a moderating impact. There may be a critical mass requirement for a successful program, and there may even be positive returns to scale (Bowen/Rudenstine 1992: 68). The more professors participate, the higher their degree of specialisation can be, which in turn reduces the single professor from general course and supervision in unfamiliar fields. A larger department at the same time increases the probability of supervising PhD contributions close to the frontiers of knowledge. Figure 1c supports this conjecture.

On average bigger departments (D12, D11) have a higher rate of placements (y-axis). But this is only half of the story, since small (D1) and medium sized (D9) departments also have high placement relations. Moreover, size by itself does not imply a high absolute number of PhDs as one can see by contrasting D7 to D11. Although the total number of PhD graduates (bubble size) appears to improve the placement ratio, this is not conclusive, as can be seen from the biggest bubble (D7), which denotes a department with a small placement ratio. The same holds true for the best department (D9) which has only a relatively modest total of PhDs per year (as well as faculty size).

4 Provisional appraisal

We present the group averages for the three different PhD program types that we have identified and sorted according to the departmental objective function (Table 1c)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Science outcome</th>
<th>Education outcome</th>
<th>Process routine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Total PhDs</td>
<td>8,3</td>
<td>10,6</td>
<td>13,3</td>
</tr>
<tr>
<td>PhD in academia</td>
<td>5,5</td>
<td>4,9</td>
<td>1</td>
</tr>
<tr>
<td>Placement pro PhD</td>
<td>0,66</td>
<td>0,39</td>
<td>0,09</td>
</tr>
<tr>
<td>Appl. acceptance rate</td>
<td>1:20</td>
<td>1:12</td>
<td>-</td>
</tr>
<tr>
<td>Articles professors</td>
<td>8,9</td>
<td>4,2</td>
<td>1,9</td>
</tr>
<tr>
<td>Size departments</td>
<td>16</td>
<td>12,7</td>
<td>9,7</td>
</tr>
<tr>
<td>Supervisors</td>
<td>16</td>
<td>10,6</td>
<td>9,7</td>
</tr>
</tbody>
</table>
Whether a department is successful in PhD placements seems to depend on some special features of the educational process. Structured education seems to be superior to unstructured education, but we also found a successful apprenticeship model (D10) and a not so successful structured program (D3).

In our interviews, two elements appeared particularly important for successful academic PhD placements: First, the dedication among professors to achieve scientific progress, to deliver excellent research and to be well known internationally; second, the mutual exchange between faculty members to work on related fields, with similar methods or even on shared topics which requires preparedness for common scientific action, and is more likely in larger departments, at least for sub-groups (D11, D12). For smaller departments this disadvantage can apparently be overcome through co-operation with other organizations, in the same town or through international partnerships (D9, D1). For departments which pursue seriously and credibly a goal of excellence, higher educational standard is a spin off, but this is not the major goal of PhD education in these departments, i.e., the objective towards which actions are oriented. Where educational goals are at the forefront, departments certainly appreciate academic careers of their PhDs, but jobs in a research department in a business company or central banks, for example, are also considered a success. For two foreign departments of this group (D12, D13) external conditions – exerted by state regulations or board decisions – direct the departments towards educational goals. The other departments in this group happen to be German departments (D3, D4, D2, D9, D5) where a professional interest or pride to meet the raising standards in economics are the core driving forces for reform. The departments which aim to keep up with their routines are mainly concerned with the education of undergraduates, PhD students being held in esteem for easing those obligations and keeping up other department routines. Their doctoral dissertations primarily deal with applied and business economics, and supervisors are content to experience matching job placements for their PhD students.

The different departmental preferences or goal structures may be understood as a simple adaptation to different opportunity structures, for instance a lack of money or a lack of suitable professorial personnel. They may also result from genuinely different judgements about the relative value of the courses of action universities can take. For the following chapter we make this assumption. If the different goals not simply originate in the desire to
reduce cognitive dissonances, one is led to ask how the goal finding process in departments is shaped. Who takes the initiative? How are majority decisions obtained? What happens to deviant members? We conceive of departments as cooperatives under competitive or political pressure and draw on the literature on collective good production in general and collegial action in partnerships in particular.

5 Goal finding and decision processes within departments

Apart from financial incentives, New Public Management reforms intend to strengthen the dean’s and the president’s position to enable quicker, hierarchical decision-making. Our interview partners do not see this happening. Within the German and Swiss sub sample we find no real increase in the dean’s power, nor do we find that departments with a structured PhD education have implemented more New Public Management mechanisms than departments with master-apprentice PhD programs. Our interview partners in departments D2 and D6 vigorously state that personality changes are more important than legal changes. It may not be surprising to learn that D1 started a structured PhD education program long before New Public Management instruments were set into place, and that D5 started its graduate school without formal governmental agreement, after having waited long for it.

It is interesting to look more precisely at the extremely passive department D8. Why does department D8 do so little to improve its academic record with regard to doctoral education? We suspect several reasons. Almost none of these professors publish in international journals, and their work is not cited by their peers. All professors are above 60 years old, with a mean age of 63.3 years; thus there are few new ideas, and an insufficient investment horizon.

Furthermore, none of the professors has experienced an Anglo-American type of PhD program. They do not view the scientific careers of their PhDs as a behaviour determining goal. Furthermore, they feel that individual chairs, not the department, are ultimately responsible for doctoral education.

Initiatives for structured PhD programs that aim for academic excellence originate from spontaneous activities of one or several department members and seem often induced by extraordinary events, e.g., a Nobel Prize winner (D1) or cooperation with a research institute (D2). It may be that faculty members who have been socialized with a strong research orientation and dedication – rather than only strong monetary incentives – are not only at the
heart of the excellence orientated departments, but also the major drivers for reform in PhD education orientated departments.

### 5.1 The importance of Socialization: Some Observations

To understand better what distinguishes the departments of the German sub sample who are subject to a relatively similar political regime, with the Swiss exception, we combine the placement success patterns presented in figure 1a-1c with several departmental characteristics that relate to the inner working of the department: What do we know about the publication output of a graduate school’s speaker? Do we find differences in the research output of younger and experienced professors? Do the engaged professors demonstrate professional ethics?

The administrative duties for a graduate school impose high opportunity costs, as the time needed there is not available for research or other activities. Interestingly, the publication output of D1’s graduate school’s speaker is above the department’s mean for the period 2000-2005. Although this older professor reserves a huge amount of working time for the graduate school’s administration, he constantly publishes his own research in international journals. The second main actor in D1 was below 45 years, he received his PhD education himself at a graduate school and received some of his professional socialization in the United States.

For D2 the absolute publication numbers do not indicate a department active in research, but a more differentiated view reveals that three of the younger professors are responsible for doubling the publication output between the period 1995-1999 and the period 2000-2005. Their work is geared towards the new scientific standards; all three have worked in the United States for more than six months. These new professors implemented a graduate school with a course program taught in English – arguably a precondition for international competitiveness – while the remaining faculty stayed passive. The engaged professors have no individual gains from their involvement, on the contrary it seems that their engagement in doctoral education does not reduce their general teaching duties.

Asked for their motivation to engage in structured and collective PhD education interviewees in D4 declared fostering PhD students as part of their professional self-image, in other words, as a precept of professional ethics.

The next section looks more systematically at departmental characteristics to explain their different attitudes and actions regarding PhD education.
5.2 *The Homogeneity of Departments*

As the variation in figures 1a -1c cannot be explained by external rules or circumstances, perhaps the internal decision processes and their determinants can help. The first part of this paper introduced three main goals: academic excellence, improving the PhD education, and the department’s daily routines. Now, we analyse what characterizes the three groups of departments. In the following we present information on average age, size of the Faculties, stays in the United States of America and the role model of the American research university. Table 2 contains the descriptive statistics.

- **Age:** We assume that on average there is a production cycle characteristic for a professional career (Rauber/Ursprung 2006). We find the tendency that the younger departments – measured by the averaged age of the department’s professors – publish more journal articles listed in the Scopus database than the older departments. That finding corresponds to the result of Bräuninger and Hau cap (2001) that younger professors prefer international journals, whereas the older colleagues prefer German speaking journals and books.

- **Relative size of the department** within the respective Faculty: D8 and D6 are embedded in a large Faculty and do not have a structured PhD program. While in D3 one professor was active in initiating a structured doctoral program with other universities, the rest of the department remained passive – this department is also part of a large Faculty compared to its own size. It appears that departments that are small compared to the rest of the Faculty are less likely to have structured PhD programs than departments that are not as small.

- **Stays in the United States of America and the role model of the American research university:** The United States still leads international university and research rankings (Combes/Linnemer 2003, Coupé 2003) and it dominates the worldwide publication market with 63 percent of the publications in the field of microeconomics in the year 2003 (Thaller 2005: 111, bibliometric analysis conducted by Fraunhofer ISI). We find that the departments differ in the variable “stays in the USA”, but there is no automatic link to the PhD model followed: the departments D1 and D9 are comparable in their percentage of professors with US experience, their publication output, and their scientific visibility, but they differ in their

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5 The variable „size of the department“ is presented in table 1a
PhD programs and their placement success. The same ambiguity holds for opinions about the US role model in our sample: they are different, even where in a considerable share of professors have had US experience, like in D7 and D10. But in general Mintzberg’s (1979: 378) idea finds support: „[…] change seeps in, by the slow process of changing the professionals – changing who can enter the profession, what they learn in its professional schools“.

- Preference for monographs or for papers: In Germany, the monograph has been the most common dissertation form. Departments still differ in their preferences, but most of our interview partners express a preference for publishable papers. The departments with the big publication bubbles are those preferring paper dissertations instead of monographs. This suggests that professors active in research transfer their scientific orientation to the next generation of researchers. This finding is consistent with Merton’s (1968: 5) who found in interviews with Nobel Prize Winners that excellent researchers “[…] convey to their associates the norms and values that govern significant research”. We find that the clear preference for “paper dissertations” is linked with two other variables: “age” and “stays in the USA”.

Table 2: Socialization and Homogeneity

<table>
<thead>
<tr>
<th>Department</th>
<th>Age (mean)</th>
<th>Size of Faculty</th>
<th>Ratio dep./school size</th>
<th>Stays in the USA</th>
<th>Role model USA</th>
<th>Preference for monographs</th>
<th>Preference for papers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
</tr>
<tr>
<td>D1</td>
<td>2 (49,2)</td>
<td>23</td>
<td>1 (0,43)</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>D2</td>
<td>2 (50,8)</td>
<td>22</td>
<td>1 (0,5)</td>
<td>1</td>
<td>1</td>
<td>change</td>
<td>1</td>
</tr>
<tr>
<td>D3</td>
<td>1 (55)</td>
<td>25</td>
<td>0 (0,24)</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>D4</td>
<td>1 (55,1)</td>
<td>16</td>
<td>2 (0,65)</td>
<td>1</td>
<td>1</td>
<td>change</td>
<td>1</td>
</tr>
<tr>
<td>D5</td>
<td>2 (44)</td>
<td>15</td>
<td>1 (0,6)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>D6</td>
<td>1 (53,1)</td>
<td>24</td>
<td>0 (0,29)</td>
<td>0</td>
<td>0</td>
<td>change</td>
<td>1</td>
</tr>
<tr>
<td>D7</td>
<td>1 (52,5)</td>
<td>16</td>
<td>1 (0,56)</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>D8</td>
<td>0 (63,3)</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>D9</td>
<td>2 (50,1)</td>
<td>34</td>
<td>1 (0,44)</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>D10</td>
<td>2 (48,2)</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Legend: first column: the departments of the German and Swiss sub sample. Second column: 0 if the mean is above 60 years, 1 if 51 < mean < 60 years, 2 if the mean is smaller or equal to 51 years. Third column: the number of professors per Faculty. Fourth column: 2 if the Faculty’s size is less than double of the department’s size, 1 if it is approximately double, 0 if it is more than double. The number in brackets shows the ratio. Fifth column: 2 if (almost) all of a department’s professors stayed in the United States, 0 if no one stayed there for research, teaching or doctoral education, 1 if it is in between. Sixth column: 1 if our interview partners mention the United States as role models regarding doctoral education, 0 otherwise. Seventh column: 0 if there is a preference for monographs as dissertation form, 1 otherwise. Eighth column: 1 if there is a preference for papers as dissertation form, 0 otherwise. Missing data is indicated by dashes.

Where very few of the department’s professors were socialized in the United States there was a preference for monographs. The group of departments with the department’s daily routines as the dominant goal are also these departments preferring monographs to paper dissertations, for example D7 and D8.

Looking at the German and Swiss group, some of the variation in educating PhD students goes plausibly hand in hand with two non-organizational variables: the age structure of departments and the socialization of their members. But these alone provide no compelling explanation of our observations. We therefore reformulate our problem and ask why some departments may more likely succeed to overcome the collective good problem of providing a structured PhD program than others.

5.3 Fostering young researchers – a local collective good problem?

In graduate schools, centres, or Graduiertenkollegs, the doctoral education is no longer an individual arrangement between one supervisor and one or a few PhD candidates, but rather a common responsibility of several supervisors and their doctoral candidates.

Regarding the professors it is a team production among partners, where free riding is not unlikely and therefore group action necessary. Maybe in successful departments one can discern a core group as suggested by Olson (1971: 54): "in short, the groups that actually do the work are quite small". In extremis, if one person expects benefits exceeding the whole group’s costs then the collective good is provided. Olson (1971: 33):

Ostrom (1999) identified several design principles of self-organized collective action. We will interpret her so called norm-using players (Ostrom 2000) – conditional co-operators and willing punishers – as initiative persons or small groups. With the common pool resource problem in sight, Ostrom summarizes the empirical knowledge (Ostrom 2000: 149). One important hint of hers is the following:
If a small core group of users identify each other, they can begin a process of cooperation without having to devise a full-blown organization with all of the rules that they might eventually need to sustain cooperation over time. The presence of a leader or entrepreneur, who articulates different ways of organizing to improve joint outcomes, is frequently an important initial stimulus […].

Another pertains to transparency. The individual actions of any one or more members in a group have to be noticeable to the group members. We therefore investigate whether the departments have established mechanisms of performance transparency.

The literature on collegial organizations, prominently Lazega’s (2001) analysis of a corporate law partnership, shows likewise that providing the collective good of co-operation and control is feasible. Lazega (2001) analyzes how flat, so-called collegial organizations manage themselves and ensure the quality of their work despite weak administrative structures and multitudinous opportunities for status conflicts, free riding, and malfeasance. Lazega (2001) conceives of individual partners as strategic “independent entrepreneurs”, but he can show that the multiplexity of relations and the multi-dimensionality of status hierarchies within a large partnership foster a division of work that leads some senior partners to assume the role of controlling and mitigating free riding tendencies among their partners. In other words the formal structure by itself is unable to ensure collective action among peers but a system – consisting of multiplex relations and status – that balances probably conflicting individual and collective interests will support it. In knowledge intensive organizations with complex tasks people depend on each other: they need co-workers or advice and with new projects these people can change. This will lead to a network of multiplex relations. For example, a professor maybe needs co-authors for her research or colleagues to organize a conference; the professors have to work together in academic self-administration committees or in doctoral programs etc.. The multi-dimensionality of status hierarchies leads to the idea of multi-status oligarchs. “[…] status summarizes members’ contributions to the collective, their recognition, and a specific form of authority derived from this recognition” (Lazega 2001: 6). Multi-status means that one gains status from several, multiple resources. A relative lost in one position is normally not connected with a lost in prestige and power. This also means that powerful, multi-status professors can influence the way of doctoral education. We think to have discovered such type of outstanding personalities who care for the public good “PhD
education” more likely in these departments who start or who sustain a structured doctoral program. Table 3 summarizes the observations from our interviews.

All departments of the German sub sample providing a (more or less) structured PhD education have a central personality taking the initiative. We could not identify such a role elsewhere. Such a person identifies like-minded people and convinces them to cooperate, which explains the similarity of column 1 and 2 in Table 3. In D1, there is one personality surrounded by a core group writing proposals and leading doctoral research groups. This professor has gained status along several dimensions – as an productive researchers, as an organizer of financial resources and of a well respected PhD program, which was rewarded by an additional professorship to the department. He might serve as an illustration for Lazega’s multi-status oligarchs (2001): one can gain status from several, multiple resources, and even in sacrificing time to tame free riding tendencies. A relative loss in one dimension can be compensated by gains in other dimensions, for instance, as team player. This implies that high ranking multi-status professors can change the doctoral education in a department. In D1, this mechanism fostered a structured doctoral program; in D10 two such personalities oppose it vigorously – with success. Here, the individual resources, the scientific reputation and the position as institute directors assure a special status among formally peers – without as yet unfolding negative consequences for the placement of their doctoral students according to their interview statements.

Table 3: Intra Departmental Dynamics

<table>
<thead>
<tr>
<th>Department</th>
<th>Initiative Person</th>
<th>Initiative Group</th>
<th>Transparency of publication performance</th>
<th>Value of fostering young researcher Department vs. core group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>D1</td>
<td>1</td>
<td>1</td>
<td>1+</td>
<td>2</td>
</tr>
<tr>
<td>D2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>D3</td>
<td>1</td>
<td>0</td>
<td>1+</td>
<td>1</td>
</tr>
<tr>
<td>D4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>D5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>D6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>D7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>D8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D9</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1 (2)</td>
</tr>
<tr>
<td>D10</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Legend: first column: the departments of the German and Swiss sub sample. Second column: 1 if an initiative person exists, 0 otherwise. Third column: 1 if an initiative group exists, 0 otherwise. Fourth column: 1 if the professors know each others output (e.g. published at the department’s homepage), 0 otherwise. Fifth column: gives information how important fostering PhD students is, 2 means high significance, 1 one goal among others, 0 less important, data in bracket if core group and department differ.

For D3 and D9 we find a surprising picture. The committed person in D3 identified his like-minded group outside his own department at other universities. D9 started a somewhat structured doctoral program, but nobody was prepared to write proposals for financial support of the program. In D9, individual research orientation and reputation of each and every member seem to have as a consequence a suboptimal provision of the collective good.

As to the transparency of the individual department members’ activity we can as yet only provide information on the transparency of publication performance, which is at least indirectly related to the collective good properties of doctoral education. Most of the research active departments implemented some mechanisms to make each others performance transparent. These departments want their professors to put their publication record at the department’s homepage. In departmental meetings the different results will be discussed and the below average performers will feel peer pressure and shame. For D1 and D3 it is even obligatory, supporting the effectiveness of peer pressure (Olson 1971: 62, Kandel/Lazear 1992). In D10, the department with the sample’s highest publication output, the interview partners accept peer pressure, but highlight the potential threats to autonomy and creativity.

To what degree do departments share the values of their committed core group, if there is one? Olson’s theory of the group presumes goal consensus. If the department as a whole does not share the esteem of the committed group of fostering early academic excellence, the committed professors will search for cooperative partners outside their own university. Such outside options are chosen by D2 and D3. Professors in D2 decided to cooperate with their neighbour universities, thus gaining a sizeable pool of professors teaching doctoral courses. At D3 there is one professor committed in a doctoral program involving the universities of one Land while the remaining professors of the department keep the old process routines. A high value of fostering young researchers is expressed by a score of 2 in table 3. The values in brackets are those for the committed core group. There is a tendency that departments valuing young excellence are those with higher placement success. D4 and D10 do not follow this
pattern. There may be moderating influences, and some of our unexpected results may be caused by our noisy data for placement success. (We only have data for two years and it was not possible to receive it all from the same source.)

6 Conclusions

This interim report on our exploratory study suggests that a structured, collectively organized PhD education fosters academic excellence. It nourishes a reserved assessment of the potential of short-term monetary incentives, in particular of weak ones, to change professorial attitudes and behaviour in the vein of New Public Management. Without dwelling on the extrinsic or intrinsic nature of reputation, it is long-term interests in scientific progress that motivates professors to invest in structured PhD education. Such preferences in turn seem to be personality traits rather than flexible reactions to externally set incentives. Insofar as a structured program requires the overcoming of local public good problems, our study gives rise to the view that one or a few persons’ initiative is a key element, in particular for a turnaround. For economists perhaps irritating, planned organisational change has to rely on socialization processes, the recruitment decision and the co-optation principle deserving highest attention. In a next step we will investigate more precisely whether the recruitment strategies differ in the course of time and in-between the departments. Therefore we use content analysis of published job offers' texts for academic positions and combine these results with our interviews. At the current state of our research we have compared one department whose dominant goal is academic excellence with one whose primary goals are the department’s daily routines. We find that the first department searches for professors who are willing to get involved with the doctoral program while the latter department formulates a stronger interest in undergraduate education. In the future, we shall study stronger external incentive systems on the one hand – for instance doctoral education and the Research Assessment exercise in Britain – and the logic of co-optation decisions on the other hand.
7 References


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