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# Challenges to Academic Freedom: Some Empirical Evidence

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It seems appropriate to distinguish at least two aspects of academic freedom: (a) freedom from external constraints in choosing topics, concepts, methods and sources, which in western democracies generally enjoys a certain level of protection by law; (b) freedom to act in the pursuit of goals and values, with academic staff being in control of the relevant means to do so, which is generally strictly related to the overall organisation of universities and the higher education system at large. Both these aspects have been understood as necessary conditions for producing and disseminating new knowledge, i.e. the two main functions of higher education institutions. It can be added that academic freedom has been considered as one of the elements defining the academic profession, at least after the Second World War. On the one hand, academic freedom is strictly connected with the idea that the pursuit of knowledge for its own sake through research represents the main goal of the academic work. On the other hand, academic freedom and peer review are considered as necessary devices to ensure quality, i.e. quality is ensured by the self-steering capacities of academics or their professional autonomy. In the last few decades, several processes have had an impact on academic freedom: (a) the rise of higher education institutions as more autonomous corporate bodies, which has implied the strengthening of the role of administrative staff at the expense of the academic community, a trend that has been named ‘managerialism’; (b) the drive of governments away from more direct forms of control in favour of a system of distant steering, which has implied stronger accountability of higher education institutions and academics and the use of assessment devices; (c) the increasing demands to and pressures on academics and higher education by both the economy and society to support economic development, innovation, and social progress, a trend to which we refer to as growing expectations of relevance.

The impact of the first two processes is quite clear and pertains mostly to relationships within higher education institutions and to the relationship between academics and the state. The impact of the last process is less clear and pertains to the relationships between academics and the external world, mostly the economy, but also society. Building on the results of the Changing Academic Profession survey, this article will address the issue of the growing pressures on academics to be 'relevant' to both society and the economy, and of the mechanisms through which the notion of relevance intrudes into the academic profession in selected European countries, especially evaluation, funding, and specific kinds of research activities.

### **Introduction**

Academic freedom has been understood as a central feature of the academic profession and as one of its founding values.<sup>1,2</sup> In the European tradition, academic freedom has been associated both with the freedom to choose topics, concepts, methods and sources both in teaching and research, and with the right of academic staff to make contributions according to standards and rules established by the academic community itself. This view of academic freedom has been complemented in the American tradition by a concern for academics' civil and political freedom looking at their role in a wider arena than universities and the academic world.

Academic freedom has also been considered as a key condition to achieve several goals: the advancement of knowledge,<sup>3</sup> the quality of research (considered as the main focus of academic work<sup>2</sup>), the encouragement and support of initiative, innovative behaviour, criticism and variety.<sup>1</sup> Academic freedom has also been strictly connected to professional autonomy, as regards academics' individual freedom to pursue truth without fear of negative sanctions, restrictions, or constraints from religious or political authorities, as well as their freedom to organise their work, to determine research and teaching goals and priorities, to set standards and rules to assess and steer academic activity.

In the last few decades, this view of academic freedom has been challenged.<sup>2,4,5</sup> Several ongoing processes within higher education have had an impact on academic freedom.

First, the relationship between the state and higher education has changed. Governments have moved from more direct forms of control towards a system of distant steering that accords more autonomy to higher education institutions but at the same time requires more accountability from single organisations and their professionals (i.e. academics) alike. Several devices of distant steering have been introduced, but they all aim at assessing the performance of both institutions and academics and at establishing a closer link between funding and performance.

Second, there has been a shift in the distribution of power within higher education institutions. As higher education institutions have become more

autonomous corporate bodies, the role of administrative staff has grown at the expense of the academic community. Ever more often academic staff have been confronted with a new kind of more professionalised management. This new type of management provides growing support to tackle an expanded and diversified student body or more complex research activities, but also strengthens control over academic life.

Finally, both higher education institutions and academics have been confronted with the increasing demands and pressures of both the economy and society to support economic development, innovation, and social progress, to provide highly qualified labour force, and to foster graduates' employability. Academics are urged to be more responsive to the demands of a wider constellation of actors including not only their peers but students and their families, management, governments and public agencies, and other external stakeholders ranging from private business firms to local communities. Ever more often academics are asked to prove the relevance or utility of their teaching and research for societal and economic needs; hence, they possibly become less free or less autonomous in setting the ends and the means of their activities.

Pressures for relevance are not new in higher education, and claims for relevance have always been central to academic activity, especially in more applied disciplines. What is new is that: (a) the number and variety of actors to whom academic activities might be relevant have grown; (b) the number and variety of actors who can decide whether claims of relevance are supported by evidence have also increased; (c) pressures on academic staff to prove the relevance of their teaching and research are increasingly associated with the need to find ways to measure it; (d) the number and variety of channels or mechanisms through which growing expectations of relevance intrude into the academic profession have increased.<sup>6</sup>

External expectations of relevance are channelled to individual academics through specific vehicles, such as financial support, evaluation of teaching and research, students' satisfaction surveys, links between universities and industry (e.g. patent licensing, spin-offs, technology transfer), other links between academe and the economy (e.g. consultancies and universities' contributions to regional development).<sup>6</sup> It is precisely through these channels or mechanisms that external expectations of social and economic relevance might have an impact on academic freedom in the form of pressures to change or redirect teaching and/or research activities, restrictions on teaching or research activities, external influence on teaching and research, etc.

Data collected through the CAP survey provide information on some of these topics. The survey features three sets of questions, namely those on the evaluation of teaching, on research funding, and on some links connecting academics to the economic sector, which allow us to identify, at the same time, mechanisms through

which expectations of social and economic relevance intrude into the academic profession, external actors with whom individual academics are confronted, and possible consequences on academic freedom. In addressing these issues, we have limited data analysis to five European countries – Finland, Germany, Italy, Norway and the United Kingdom – with an occasional reference to Australia and the US as terms of comparison outside Europe. Both cross tabulations and multivariate analysis are used in order to take into account the four main axes of differentiation of the academic profession, namely the discipline, the institutional dividing line, the ranking system, and national differences.<sup>2</sup> While full results of the analysis can be obtained from the author, in the following selected evidence and synthetic conclusions are presented.<sup>7</sup>

### **The evaluation of teaching**

The evaluation of teaching is considered as one of the main channels through which relevance intrudes into the academic profession, one of the main mechanisms through which academics' performances are controlled, and one of the main arenas in which power games are played within and around higher education.<sup>2,6</sup> Teaching evaluations may channel several kinds of expectations: expectations of relevance for institutional development and prestige, cultural or ethical orientation, quality of study programmes, employability, or the vocational relevance of teaching.

Academics participating in the CAP survey were asked to indicate by whom their teaching is regularly evaluated. According to the collected data, respondents from different countries answered – quite unanimously – that students are the main actor evaluating their teaching (see Table 1).

Further, academics were asked whether they improved their instructional skills in response to teaching evaluations. A positive response to teaching evaluation only holds true for the majority of respondents in two European countries (59% in Italy, 55% in the UK) and the two non-European countries included here (63% in Australia, 53% in the US), while in the other countries the figures are substantially lower (47% in Norway, 36% in Germany, 13% in Finland).

Considering the encouragement to improve instructional skills in response to teaching evaluations as an indicator of academics' responsiveness to the expectations of various actors with respect to one of the main tasks of the academic profession, it is possible to investigate which factors can explain this attitude. In order to investigate which are the determinants of academics' responsiveness to teaching evaluations, and especially to find out whether student evaluation encourages academics to improve their teaching, a multivariate model is set up. The model refers to five selected European countries (Finland, Germany, Italy, Norway and the UK) and has as a dependent variable a dummy variable

**Table 1.** Actors of evaluation of teaching (percentage; multiple answers possible)

	Finland	Germany	Italy	Norway	United Kingdom	United States	Australia	Seven countries
Your students	84	80	87	85	93	90	85	86
The head of your department or unit	55	18	33	25	52	80	67	45
Yourself (formal self-assessment)	n.a.	35	25	27	53	59	52	40
Your peers in your department or unit	34	15	20	22	65	54	33	33
<i>N</i> =	(1262)	(1299)	(1701)	(969)	(964)	(1144)	(857)	(8196)

Question E3: By whom is your teaching, research, and service regularly evaluated?

Note: n.a. = not available.

Source: CAP survey 2007–2008.

opposing academics who are encouraged to improve their instructional skills in response to teaching evaluation to academic staff who are not (or only weakly) encouraged to do so. A dummy variable opposing academics whose teaching is regularly evaluated by their students to those whose teaching is not evaluated by students is chosen as an independent variable.

The effect of student evaluation on the improvement of teaching needs to be controlled by three sets of factors. First of all, student evaluation is not the only kind of evaluation that can have an impact on academics' behaviour. As has been reported, academics' teaching is also evaluated by the head of their department or unit, and by their peers. So it is necessary to take into account the possible impact of these evaluations. Second, academics may react positively to teaching evaluation not (or not only) because of external pressures to do so but because they have a personal and subjective commitment to this activity. Finally, as has been already noted, academics are not a homogeneous body: they are in different academic ranks, work in different types of institutions, belong to different disciplinary groups, and work and live in different countries. All these factors may have an impact on their willingness to respond positively to teaching evaluations.

While the full results of the binomial logistic regression used for data analysis are not reported, Table 2 shows the negative (–) or positive (+) net effects of the independent variable, and of the controlling variables, on the probability that academics are encouraged to improve their teaching in response to teaching evaluations. Statistically not significant effects are omitted (blanks).

Other things being equal, student evaluation indeed encourages academics to improve their teaching. It is important to stress that students' positive impact on teaching is controlled for other two types of evaluation, carried out by either an institutional authority or peers, for academics' individual preferences, and for academic rank, type of institution, discipline of teaching, and country. Further, some other factors have a significant net impact on academics' attitude. Both a regular evaluation by the head of department or unit, and academics' prevalent commitment to teaching increase the probability that they improve their teaching. These findings hold true for different discipline (business administration and economics, medical science, health related sciences, and social services). Finally, compared to Germany, working in Finland decreases the probability to improve teaching, while working in Italy, Norway and in the United Kingdom increases it.

These results allow a number of conclusions. First, teaching evaluation is indeed a mechanism through which academics become more responsive to the expectations of students and possibly also their families. This happens to a different extent across countries, yet the relationship is significant, even when taking into account national differences. As a consequence, teaching evaluation can be considered as a channel or a mechanism through which expectations for social relevance intrude into the academic profession. Second, student evaluation

**Table 2.** Net effects on the encouragement to improve instructional skills in response to teaching evaluation\*

Evaluation by students	+	Discipline of teaching (Reference cat.: social sciences )	Country (Reference cat.: Germany)
Evaluation by head of unit	+		
Evaluation by peers		Humanities & arts	Finland
Preferences in teaching	+	Business administration, economics	+
Academic rank		Law	Norway
Type of current institution (Reference cat.: universities )		Life sciences	United Kingdom
		Physical sciences, mathematics, computer sciences	+
Other higher education institutions		Engineering, manufacturing, construction, architecture	
Research institutions		Agriculture	
		Medical sciences, health related sciences, social services	+
		Other	

\*Results of a binomial logistic regression.  
 Source: CAP survey 2007–2008.

is not the only practice that has an impact on the improvement of instructional skills. Indeed, data analysis results show that the evaluation by heads of departments or units has a net positive impact as well. Thus, it can be said that the improvement of teaching skills is the joint outcome of two independent factors, a top-down institutional control and a bottom-up societal pressure. Third, evaluation of teaching can certainly be considered as a control mechanism constraining academics' professional autonomy. Yet, evaluation is not the only factor explaining the improvement of instructional skills. Academics whose interests lie primarily in teaching, or lean towards teaching, are more likely to improve their didactics in response to teaching evaluation. Hence, personal preferences – representing a sphere of exercise of academic freedom – and teaching evaluations both have an impact on the efforts to improve the quality of teaching. All in all, data collected in five European countries show that teaching evaluation represents a channel through which expectations of social relevance intrude into the academy, but as a mechanism to improve academics' responsiveness towards students it is not necessarily silencing academic freedom.

### **Research funding**

In the last two decades, relevant changes have occurred in the funding of research, and especially in the funding of university research.<sup>8</sup> The number of actors involved in research funding has grown, public funding of university R&D has declined. The reason for this is that, especially in scientific and technological research, costs have increased, which has urged universities to find new sources of funding. The involvement of new actors or stakeholders in research funding and changes in research funding procedures have led to the involvement of actors other than the academic community in setting research priorities and deciding financial allocations. In addition, research has shifted towards more short-term and market-oriented goals. It is maintained that these changes may also have an impact on academic freedom in terms of constraints placed upon the open dissemination of research results, the free flow of scientific information, and the timing and conditions of publications.

In this context, it does not come as a surprise to note that the majority of the CAP survey's respondents in the selected countries strongly agree with the view that the pressure to raise external research funds has increased since their first appointment (min. US 69%; max. Germany 87%). On average, 50% or more of the funding of academics' research comes from sources other than their own institution, even though academics also state that the main single source of funding of their research is still their own institution. Public funding – either from public research agencies or government entities – comes in second place, followed by private funding – either from business firms or not-for-profit

foundations. These findings are consistent with what we know of university research funding: (a) there has been a growing pressure on academics to search for external research funds; (b) academics are confronted with, and are dependent on, a plurality of funding sources.

What are the consequences of this state of affairs on academic freedom? Academics participating in the survey were asked to express their view on possible restrictions on the publication of results from their researches. Two questions were addressed: one referring to publicly funded research, and one referring to privately funded research.

Only a minority of academics (between one out of ten and one out of three) strongly supports the opinion that restrictions on the publication of results from their research (both publicly or privately funded) have increased since their first appointment. Differences across countries are small, but German respondents denounce a trend towards restrictions on publications much more than respondents from other countries.

In order to gain a better picture (at least in part) of the relation between research funding and academic freedom, two separate multivariate models can be set up. The first model has as a dependent variable, a dummy variable opposing academics strongly supporting the view that restrictions on the publication of results from their publicly funded research have increased since their first appointment to academics who do not (or only hesitantly) support this view. In the second model, the dependent variable refers to privately funded research. Both models have as an independent variable the discipline of the respondents' academic unit. As in the previous model on teaching evaluation, disciplines are divided into ten groups, with the social sciences as the reference category. Similarly, both models have academic rank, type of current institution, and country as controlling variables. Yet the two models also differ because a further set of controlling variables based on the main source of funding is included. These variables aim at distinguishing academics who have one main source of funding (i.e. who report that the highest percentage of their research funding comes from a single source) from the others. These dummy variables are added to the models because we want to control the impact on restrictions on the publication of results from publicly funded research for public sources of funding, and to control the impact on restrictions on the publication of results from privately funded research for private sources of funding.

As we are interested in assessing the impact of external research funds on academic freedom, we leave aside academics' own institutions, focusing instead on external sources of funding. Consequently, two versions of the first model are set up, one controlling for public research funding agencies as the main source of funding, and one controlling for government entities as the main source of funding. Similarly, two versions of the second model are prepared, one controlling

for business firms or industry as the main source of funding, and one controlling for private not-for-profit foundations or agencies as the main source of funding.

While the results of the four binomial logistic regressions used for data analysis are not reported, Table 3 summarizes the main findings. As before, the table shows the positive (+) or negative (−) net effects of the independent variable, the discipline of the respondents' academic unit, on the probability that academics strongly support the view that restrictions on the publication of results have increased since their first appointment. Net effects of the controlling variables are also reported. Effects are shown separately for publicly funded research, controlling for two different public sources of funding, and for privately funded research, controlling for two different private sources of funding. Statistically not significant effects are omitted (blanks).

These findings suggest that there are specific areas or instances where academic freedom – in the form of free dissemination and sharing of research results – is challenged or is under stress: (a) in the field of medical sciences; (b) in three other disciplinary fields, namely life sciences, engineering & architecture, and agriculture, when research is privately funded; (c) having business firms or industry as the main source of research funding; (d) in research institutions outside universities, when research is privately funded; and (e) in Germany more than in the other four European countries.

### **Links connecting academics to the economic sector**

In the last few decades, the relationships between academics and the economic sector have changed in several respects.<sup>8</sup> In many countries, the links between universities and business, industry laboratories, and other research providers have become closer and more effective. Both universities and academics have been increasingly involved in applied research, in research commercialisation, through means such as patent licensing or the creation of spin-off firms, but also through sponsored research, and in technology transfer processes moving inventions and know-how from universities to other organisations. Different and sometimes contrasting views have been expressed on these changes. On the one hand, benefits accruing to universities and academics have been highlighted: research funding support, consultancies, support to postgraduate students and employment opportunities for graduates, flows of information on new developments from industries. On the other hand, it has been argued that closer links with the economic sector threaten traditional academic values, corrupt academics, distort and have negative impacts both on research and teaching.

The CAP survey investigates some of the possible links between academics and the economic sector, namely the kind of research activity carried out and the involvement in technology transfer processes. The survey also looks at some

**Table 3.** Net effects on increased restrictions on the publication of research results\*

	Restrictions on the publication of results from publicly funded research		Restrictions on the publication of results from privately funded research	
	(1)	(2)	(3)	(4)
<b>Discipline of academic unit</b>				
Humanities & arts				
Business administration, economics				
Law				
Life sciences			+	+
Physical sciences, mathematics, computer sciences	–	–		
Engineering, manufacturing, construction, architecture	–	–	+	+
Agriculture			+	+
Medical sciences, health related sciences, social services	+	+	+	+
<b>Main source of funding</b>				
Public research funding agencies		n.a.	n.a.	n.a.
Government entities	n.a.		n.a.	n.a.
Business firms or industry	n.a.	n.a.	+	n.a.
Private not-for-profit foundations/agencies	n.a.	n.a.	n.a.	
<b>Academic rank</b>				
(Reference cat.: junior or other position)				
Senior position	+	+	+	+

**Table 3.** *Continued*

	Restrictions on the publication of results from publicly funded research		Restrictions on the publication of results from privately funded research	
	(1)	(2)	(3)	(4)
<b>Type of current institution</b> (Reference cat.: universities)				
Other higher education institutions				
Research institutions			+	+
<b>Country</b> (Reference cat.: Germany)				
Finland	–	–	–	–
Italy	–	–	–	–
Norway	–	–	–	–
United Kingdom	–	–	–	–

\*Results of binomial logistic regressions.

Note: in column (1) effects on restrictions in publicly funded research are controlled only by public research funding agencies as the main source of funding while in column (2) they are controlled only by government entities as the main source of funding; similarly, in column (3) effects on restrictions in privately funded research are controlled only by business firms or industry as the main source of funding while in column (4) they are controlled by private not-for-profit foundations or agencies as the main source of funding; n.a. = not applied.

Source: CAP survey 2007–2008.

characteristics of academics' institutions that may have an impact on the establishment of links with the economic sector, and poses the question of whether external sponsors or clients have or do not have influence over academics' research activities. As a result, we can gain a better understanding of the mechanisms through which expectations of economic relevance intrude into the academic profession, and of the possible consequences for academic freedom or academics' professional autonomy.

As shown in Table 4, rather small proportions of respondents say that their primary research in the reference year was commercially-oriented or intended for technology transfer, or report having been involved in the process of technology transfer in the same year. Greater proportions – although varying across countries – support the view that their institution emphasises commercially-oriented or applied research, or report that their institutions encourage: (a) academics to adopt service activities or entrepreneurial activities outside the institution; and (b) individuals, businesses, foundations, etc, to contribute more to higher education. Finally, almost one-third of respondents acknowledge the influence of external sponsors or clients on research activity.

Leaving aside the problem of which traits of the academic profession facilitate academics' links with the economic sector, we focus on the influence that external sponsors or clients, likely related to the economic sector, may have on academics' research activities in the European countries selected. External sponsors' or clients' influence is not necessarily a constraint on academic freedom, but nevertheless can represent a challenge to academics' professional autonomy.

While the full results of the corresponding binomial logistic regression are not shown, Table 5 sums up the results of a multivariate model having as a dependent variable a dummy variable opposing academics who acknowledge the influence of external sponsors or clients to scholars who do not acknowledge such influence, and taking into consideration several factors possibly having an impact on the exposure to external influence: the four axes differentiating the academic profession, two types of activity in which academics may be personally involved, namely commercially-oriented research or research intended for technology transfer, and direct involvement in technology transfer itself, the institutional setting in which academics may carry out these two types of activity (i.e. institutions emphasising commercially-oriented or applied research).

While academic rank does not explain exposure to external influence, it can be seen that working in the field of humanities and arts (compared with the social sciences) and working in Norway (compared with Germany) decrease the probability of being exposed to external influences. In contrast, being involved in technology transfer, working in institutions emphasising commercially-oriented or applied research, working in non-university institutions or in research institutions

**Table 4.** Possible links between academics and the economic sector and their influence on research activities (percentage)

	Finland	Germany	Italy	Norway	United Kingdom	United States	Australia	Seven countries
Academics engaged in commercially-oriented research	19	22	16	21	16	15	19	19
Academics involved in technology transfer	32	24	15	17	19	17	20	20
Institution emphasizing commercially-oriented or applied research	40	38	37	50	54	38	63	45
Institution encouraging service or entrepreneurial activities	20	60	15	15	30	37	36	30
Institution encouraging external contributions	19	49	23	23	38	64	50	37
Academics acknowledging the influence of external sponsors	30	33	31	28	34	26	34	31

Question D2: How would you characterize the emphasis of your primary research this (or the previous) academic year? Commercially-oriented/intended for technology transfer (Scale of answer 1 = ‘Very much’ to 5 = ‘Not at all’; % refer to responses 1 and 2).

Question D3: Have you been involved in any of the following research activities during this or the previous) academic year? Involved in the process of technology transfer (Y or N).

Question D6: Please indicate your views on the following: Your institution emphasizes commercially-oriented or applied research (Scale of answer 1 = ‘Strongly agree’ to 5 = ‘Strongly disagree’; % refer to responses 1 and 2).

Question E6: To what extent does your institution emphasize the following practices? Encouraging academics to adopt service activities/ entrepreneurial activities outside the institution; Encouraging individuals, businesses, foundations etc. to contribute more to higher education (Scale of answer 1 = ‘Very much’ to 5 = ‘Not at all’; % refer to responses 1 and 2).

Question D6: Please indicate your views on the following: External sponsors or clients have no influence over my research activities (Scale of answer 1 = ‘Strongly agree’ to 5 = ‘Strongly disagree’; % refer to responses 4 and 5).

Source: CAP survey 2007–2008.

**Table 5.** Net effects of several factors on the exposure to external sponsors' or clients' influence on research activities\*

Commercially-oriented/intended for technology transfer research		Discipline of academic unit	
Involvement in technology transfer	+	(Reference cat.: social sciences)	
Institution emphasizes commercially-oriented or applied research	+	Humanities & arts	–
Academic rank		Business administration, economics	
Type of current institution (Reference cat.: universities)		Law	
		Life sciences	
Other higher education institutions	+	Physical sciences, mathematics, computer sciences	
Research institutions	+	Engineering, manufacturing, construction, architecture	+
		Agriculture	
		Medical sciences, health related sciences, social services	
		Country (Reference cat.: Germany)	
		Finland	
		Italy	
		Norway	–
		United Kingdom	+

\*Results of a binomial logistic regression.

Source: CAP survey 2007–2008.

(instead of working in universities), working in the fields of construction and architecture, engineering, and manufacturing (instead of working in the social sciences), and working in the United Kingdom (instead of working in Germany) increase the probability of being exposed to external influence. We can say that, in the settings mentioned above, academics' professional autonomy is more likely to be challenged.

### Conclusions

CAP data from selected European countries support the idea that teaching evaluation, research funding and links with the economic sector connect academics to external actors. These dependencies can be considered as mechanisms or

channels through which expectations of social and economic relevance intrude into the academic profession.

Teaching evaluation establishes a relationship with students (possibly also with their families) and involves a large majority of academics (80% or more). Teaching evaluation makes academic staff more responsive to students and their expectations. This can be observed to a different extent across countries. Many academics (more than 75%) acknowledge an increased pressure to raise external research funds, which compels them to establish connections with non-academic actors, i.e. public or private funding agencies and business firms. Several research or service activities involve academics in partnerships and exchanges with various economic actors outside academe, especially with sponsors or clients. Academics personally involved in activities linking them with the economic sector are a minority ranging from 15 to 30%, while the percentage of academics working in institutions fostering links with the economy ranges from 15 to 60%. The quest for external research funding and the links with the economy consequently confront academics with alien demands and expectations.

CAP data also shed light on the possible effects of the growing expectations of social and economic relevance (channelled by evaluation, funding, and links with the economic sector) on academic freedom and academics' professional autonomy. As has been shown, student evaluation of teaching makes academics more responsive to some expectations of social relevance that do not necessarily constrain academic freedom. On the contrary, research funding from external sources has a clear impact on academic freedom because this type of funding entails restrictions related to publications, although only a minority of academics – ranging between 10 and 30% – strongly support the view that these restrictions have increased since their first appointment. Data analysis draws our attention to specific areas in which academic freedom – in the form of free dissemination and sharing of research results – is challenged. This happens when research funds originate predominantly from firms and industries, in four disciplinary fields (engineering and architecture, medical sciences, life sciences, and agriculture), in research institutions compared with universities, and in Germany compared with the other four European countries. Finally, external sponsors or clients, likely belonging to the economic sector, challenge academics' professional autonomy as they – according to more or less one-third of respondents – exert an influence over research activities. This influence appears to be higher (compared with reference categories) in five cases, namely when academics are involved in technology transfer, working in institutions emphasizing commercially-oriented or applied research, working in non-university institutions or in research institutions, working in the field of engineering, manufacturing, construction & architecture, and working in the United Kingdom.

Nowadays, academic freedom and academics' autonomy are certainly challenged: teaching is assessed by students, research funding can entail restrictions on the free

dissemination of results, links with the economy can expose research activities to the influence of sponsors or clients. Yet student evaluation does not necessarily restrict academic freedom. Increased restrictions on publication involve a minority of academics in specific areas or under specific conditions; a minority of academics, albeit a considerable one, acknowledges the influence of external actors over research activities, again in specific areas or under specific conditions. Altogether, the findings presented in this article support the view that there is still considerable room for academic freedom and academics' autonomy, especially in universities.

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