



Who becomes a tenured professor, and why? Panel data evidence from German sociology, 1980–2013



Mark Lutter^{a,*,1}, Martin Schröder^{b,2}

^a Max Planck Institute for the Study of Societies, Paulstr 3, 50676 Cologne, Germany

^b University of Marburg, Ketzlerbach 11, 35037 Marburg, Germany

ARTICLE INFO

Article history:

Received 14 May 2015

Received in revised form

17 November 2015

Accepted 28 January 2016

Available online 23 February 2016

Keywords:

Academic careers

Tenure

Human capital

Social capital

Symbolic capital

Gender

ABSTRACT

Prior studies that try to explain who gets tenure and why remain inconclusive, especially on whether non-meritocratic factors influence who becomes a professor. Based on career and publication data of virtually all sociologists working in German sociology departments, we test how meritocratic factors (academic productivity) as well as non-meritocratic factors (ascription, symbolic and social capital) influence the chances of getting a permanent professorship in sociology. Our findings show that getting tenure in sociology is strongly related to scholarly output, as previous studies have shown. Improving on existing studies, however, we show specifically that each refereed journal article and each monograph increases a sociologist's chance for tenure by 10 to 15 percent, while other publications affect odds for tenure only marginally and in some cases even negatively. Regarding non-meritocratic factors, we show that network size, individual reputation, and gender matters. Women get their first permanent position as university professor with on average 23 to 44 percent fewer publications than men; all else being equal, they are about 1.4 times more likely to get tenure than men. The article generally contributes to a better understanding of the role of meritocratic and non-meritocratic factors in achieving scarce and highly competitive job positions in academia.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

Merton (1973: 272f) posits in his theory on “The Normative Structure of Science” that to “restrict scientific careers on grounds other than lack of competence is to prejudice the furtherance of knowledge.” He also claims, however, that such “[u]niversalism is deviously affirmed in theory and suppressed in practice.” We test whether and to what extent meritocratic and non-meritocratic factors influence the odds of getting a tenured¹ position in German sociology departments, using event history modeling on a unique

longitudinal career dataset of an almost complete population of sociologists in the German academic labor market.

In particular, we test four theoretical approaches, one meritocratic and three non-meritocratic ones. First, theories of human capital suggest that academics get a tenured position through academic performance, as reflected by a strong publication record. Second, theories of ascription highlight that academics may be advantaged or disadvantaged because of ascriptive characteristics, such as their gender. Third, theories of symbolic capital assume that reputation through membership in prestigious institutions, international research experience, or the accumulation of academic awards influences who gets tenure, regardless of academic productivity. Fourth, social capital approaches argue that the chances for tenure increase, again independently of mere productivity, with the number of personal network ties within the academic labor market.

Our study contributes to prior research in several ways. Existing studies mostly rely on surveys and cross-sectional data to explain success in the academic labor market. When studies use longitudinal information at all, they generate it through retrospective survey questions (Cruz-Castro and Sanz-Menéndez, 2010; Jungbauer-Gans and Gross, 2013; Möller, 2013; Plümper and Schimmelfennig, 2007), which are vulnerable to survey-related biases: response and non-response biases due to self-reporting and self-selection, social

* Corresponding author. Tel.: +49 2212767154.

E-mail addresses: lutter@mpifg.de (M. Lutter), martin.schroeder@uni-marburg.de (M. Schröder).

¹ Mark Lutter is head of the Research Group on the Transnational Diffusion of Innovation at the Max Planck Institute for the Study of Societies, Cologne.

² Martin Schröder is a junior professor of economic sociology and the sociology of work at the University of Marburg.

¹ We refer to the word “tenure” as a synonym for a permanent academic position as full or associate professor (W3 or W2, according to the German scheme). As we outline below, “tenure” in the German context does not result from an internal promotion out of a tenure-track position, because tenure-tracks are almost inexistent in German academia.

desirability, recall errors, and problems of endogeneity. Especially survivor bias might occur if studies focus solely on those who already pursued a successful academic career. While these studies offer interesting insights into the question of who gets tenure, it is uncertain whether their results remain valid when compared to nonresponsive longitudinal data.

Additionally, the findings of prior research are far from being clear in identifying the factors that actually determine success in academia. While there is consensus that meritocratic factors such as publication output are essential in becoming a professor (Sanz-Menéndez et al., 2013), results about the exact importance of non-meritocratic factors remain inconsistent (Musselin, 2010). As we outline below, most studies postulate effects of social and symbolic capital, but empirical results have been mixed. Gender effects remain contested largely because of possible survivorship biases. For these reasons, research urges that “future studies investigating academic careers have to select from PhD cohorts” (Jungbauer-Gans and Gross, 2013: 75) or even to follow careers from the earliest stages onwards until scholars have received tenure (Schubert and Engelage, 2011: 439, 453). Hence, it is still not clear whether and to what extent non-meritocratic factors determine career success in academia.

Our results show that getting tenure in sociology is indeed strongly correlated to scholarly output. Improving on previous research, however, we analyze what types of publications affect tenure and to what degree. We find that several non-meritocratic factors matter as well, such as network size and individual reputation. Transnational and institutional symbolic capital do not directly affect tenure. With regard to ascriptive characteristics, women have a 40 percent higher chance of being hired as a professor than their male colleagues, holding scholarly publications and all other factors constant.

Academia provides a unique possibility to study the role of meritocratic and non-meritocratic factors in career success, because a widely accepted measure of productivity exists in the form of publications (Hix, 2004: 296ff.; Long, 1978; Long et al., 1993; Merton, 1973: 270). We chose the field of sociology for two reasons. First, in terms of methodology and epistemology, sociology is located between the sciences and the humanities. Second, the percentage of women among graduates in sociology is relatively equal to the percentage of women in the overall population. Contrary to the natural sciences, where the percentage of women is far below that of the general population, and contrary to the humanities, where it tends to be higher, sociology is a representative case in this sense.

German academia is a particular instructive academic labor market to study, because it has no tenure-track system and offers few permanent jobs below a full professorship, contrary to U.S., British or French academia. This means every postdoc either has to become a tenured full professor or has to drop out of the system eventually—usually around the age of 40. Contrary to the United States, aspiring researchers applying for a permanent position are not evaluated internally by their colleagues, but apply for a position at a different university. In this sense, German academia is an external market at the level of hiring a professor. Even the 2002 amendment in Germany (5. *Novelle des Hochschulpakts*) did not change that, although it was meant to enhance career perspectives for junior faculty by introducing the “junior professor” and relaxing the requirement of the previously mandatory habilitation thesis to get a tenured professorship.²

² The German junior professor is equivalent to the US assistant professor, but rarely equipped with a tenure track option and strictly limited to six years. The habilitation thesis is comparable to a second Ph.D. dissertation, and used to be mandatory to apply for a permanent professorship.

Another feature of the German system is that gender equality policies exist since the 1980s, but their actual effect is contested. While these policies work at several levels, such as having equal opportunity commissioners in hiring committees, state-funded career resources solely for women, or nationwide voluntary commitments by the universities to increase the number of women among professors, one would expect increasing chances for women in German academia. However, scholars argue that these policies have remained mere lip service, and have not removed symbolic or structural discrimination (Althaber et al., 2011; Gross and Jungbauer-Gans, 2007: 465f.; Matthies and Zimmermann, 2010: 197ff.).

2. Theory: what explains who gets tenure?

The null hypothesis in merit-based societies is that applicants displaying the highest achievement are to be rewarded with the most desirable positions (Davis and Moore, 1944: 243; Durkheim, 1893: 121). Displays of human capital should, therefore, indicate who gets a highly desirable job (Becker, 1960: 347ff.; Becker, 1964: 7ff.). In the tradition of Merton's (1973: 270) popular dictum that “the institutional goal of science is the extension of certified knowledge,” it is widely accepted that human capital in the field of academia is best measured in terms of output, notably by scholarly publications, especially when these have passed a double-blind peer review process (Gerhards, 2002: 19f.; Hix, 2004: 296ff.; Jungbauer-Gans and Gross, 2013: 84; Long et al., 1993: 703; Münch, 2006: 473).

That publication output does indeed matter for getting tenure is an established finding. Studies of the German academic labor market show that publications increase the odds of being hired as a professor in political science (Plümper and Schimmelfennig, 2007: 115), sociology (Jungbauer-Gans and Gross, 2013: 85), and economics (Heining et al., 2007: 23). In addition, studies on the U.S. academic labor market show that department chairs later deem their colleagues more competent and regret prior recruitment decisions less frequently when tenure was granted based on publications in prestigious journals (Rothgeb, 2014: 185). However, previous studies mostly measure the absolute number of publications, neglecting that different types of publications may have different impacts. Double-blind peer-reviewed journal articles should especially be counted as merit-based, because the identity and thus possible ascriptive, social, or symbolic criteria of the author are unknown, by definition.

This leads to the second explanation of tenure success, namely discrimination grounded in ascriptive characteristics. Hiring committees may base their decisions on a “taste for discrimination” (Becker, 1971 [1957]: 14; Becker, 1993: 387), meaning that they are willing to prefer less-qualified candidates over those from less advantaged or less legitimate social groups, such as women or ethnic minorities (Burt, 1998; Lin, 2001). A “taste for discrimination” might result from a masculine symbolic order (Fotaki, 2013) within the primarily male-dominated academic system, which leads to disadvantages for women. Hiring committees may practice what Phelps (1972b) calls “statistical discrimination,” whereby they infer someone's productivity by his or her membership to ascribed characteristics such as race or sex, instead of estimating productivity through the actual individual attributes of a candidate (Arrow, 1972: 96; Phelps, 1972a: 25f.; Phelps, 1972b: 659).

Empirical studies indicate that the share of women in academia diminishes with successive career stages (Long et al., 1993: 704; Rosenfeld, 1981). Studies describe this as a “cooling out” or “leaky pipeline” effect (Krais, 2002; Leemann et al., 2010; Wolfinger et al., 2009), which may result from “allocative” discrimination (Petersen

and Saporta, 2004). This means that women are successively discouraged from pursuing an academic career with each additional career step. Field experiments using CVs of the same quality, where only the applicant's gender differs, show mixed results, however. Females are judged by harsher standards when applying for academic entry-level jobs (Moss-Racusin et al., 2012), but not when applying for tenure at later career stages (Steinpreis et al., 1999: 522f.). A recent study finds that a woman's chance to get a tenure-track position in a STEM discipline is twice as high as a man's (Williams and Ceci, 2015).

Other research shows that publications and academic achievements pay off more for men than for women, a finding which has been labelled the "Matilda-effect" (Knobloch-Westerwick et al., 2013; Lincoln et al., 2012). Moreover, women in academia face stronger structural hurdles than men, leading to lower rates in academic success and publication output (Ding et al., 2006: 666; Elsevier, 2015; Long, 1990: 1313; Tartari and Salter, 2015; Xie and Shauman, 1998).

Following this prior research, one would expect that women face disadvantages in the academic labor market. However, empirical studies of the German academic labor market suggest the opposite: Plümper and Schimmelfennig (2007) indicate that women in political science have higher odds of getting tenure than men, after controlling for publications (Plümper and Schimmelfennig, 2007: 115). Jungbauer-Gans and Gross (2013) show that women are more than twice as likely as men to get tenure in sociology, after holding publications constant. Jungbauer-Gans and Gross (2013: 86) hypothesize that this results from the creation of professorships in gender studies, a field in which women specialize disproportionately.

However, as indicated above, these studies draw on self-reported survey data from advanced postdocs (academics with the German postdoctoral qualification known as the habilitation), so the female advantage they portray may be exaggerated as a result of the survivorship effect, insofar as only the most successful women stay in academia long enough to be included in a study (Heining et al., 2007; Jungbauer-Gans and Gross, 2013: 74ff; Plümper and Schimmelfennig, 2007: 102f.). Schubert and Engelage's (2011: 450f.) study suggests that young women publish less prior to their PhD and have fewer networks through which to find their first job. However, once they "survive" the postdoc period, they are as integrated into academic networks as men, possibly because women with fewer network ties have by then dropped out of academia. Therefore, it is unclear whether the finding that women have better chances of becoming a tenured professor is a statistical artefact due to survivor bias. Nor do we know whether this finding would lose explanatory power if leaky pipelines – that is, the fact that women leave academia disproportionately to men before starting a postdoc – were taken into account.

Apart from productivity and ascriptive discrimination, symbolic capital may also influence success in academia (Bourdieu, 1986: 18). Symbolic capital results from reputation gained through membership in prestigious national or international institutions. This is essentially a spill-over effect: academics accumulate symbolic capital through the institutions with which they have been associated; these associations become signals of individual excellence, which in turn influence one's chance of getting a position in reputable institutions, independently of mere academic productivity (Allison et al., 1982). This seems to be a pertinent mechanism in U.S. sociology, where a department's prestige is related more to its previous reputation than to its recent publications (Keith and Babchuk, 1998: 1522). In Germany, however, all universities used to be more or less equal. This is gradually changing since the 2000s, due to the so-called Exzellenzinitiative, which increased competition among universities and probably leads to increased reputational effects (Münch, 2014).

Another indicator of symbolic capital is the reputation gained through academic awards. While awards may indicate high-quality scholarship, they can also reward academic potential, innovation, or even conformity to established academic norms. In any case, if awards influence tenure success irrespective of an individual's actual publications, they also function as a form of symbolic capital, affecting an individual's success independently of scholarly output.

To date it is unclear whether and to what extent academic awards influence getting tenure, irrespective of academic performance and publications. While some studies suggest no clear effect of a department's prestige on academic productivity (Long, 1978), others find the opposite (Allison and Long, 1990). Studies of the U.S. academic labor market find that individuals from prestigious PhD-granting institutions are more likely to get tenure (Baldi, 1995; Bedeian et al., 2010; Crane, 1970). In Germany, however, no such effect has been shown so far (Baier and Münch, 2013). Studies on German academia argue instead that there is increasing competition between the symbolic capital of departments and warn that this may overshadow individual competition based on publications, which is seen as more merit-based (Baier and Münch, 2013; Hartmann, 2010: 385; Münch, 2006: 477f.; Münch, 2014). However, it is not yet clear whether the ostensible quality of one's department indeed influences a sociologist's chance for tenure, when holding personal productivity constant.

A fourth strand of theory argues that tenure largely depends on "who one knows," which is commonly defined as social capital (Lin, 2001). Bourdieu (1986: 21) and Coleman (1988) understand social capital as adherence to a durable, relatively close network of personal relations that may help in getting a job by providing access to important information or tacit knowledge.

In academia, however, job offers are publicly announced, so there is little room for getting privileged information about job openings through personal ties. Instead of providing information barred from others, network ties may increase the probability that a candidate is personally known to members of a search committee. In that case, the committee can estimate more accurately whether a candidate is reliable, trustworthy, friendly, and agreeable to work with, which reduces the uncertainty connected to a hiring decision (Fernandez and Weinberg, 1997; Musselin, 2010: 112ff.).³ Since the chance of being known to someone in the search committee increases with the number of social ties someone has in academia, candidates with more social ties should have better chances to get tenure, even if they have fewer or lower-quality publications than candidates with fewer academic network ties. Hence, the social capital approach assumes that tenure is furthered by a larger personal network within the academic field.

Empirical research indeed indicates a positive social capital effect within academia. Social networks increase research productivity (Rawlings and McFarland, 2011), citations and scholarly impact (Li et al., 2013; Wuchty et al., 2007). A sociological study of the U.S. academic labor market shows that it is not necessarily academic productivity, but the social network structure generated through the exchange of PhDs among departments that explains a department's prestige (Burris, 2004: 256).

However, previous studies that analyze the effect of social networks on who gets tenure remain inconclusive. Godechot and Mariot (2004), analyzing the network density of PhD committees in French political science, find that both dense and weak

³ However, research shows that professors whose tenure has been granted based on "collegiality" are later deemed as less competent by their fellow department chairs (Rothgeb, 2014: 184).

committee networks have positive effects on a candidates' future careers. Moreover, having a PhD advisor in the hiring committee doubles the odds of getting hired (Godechot, 2014). For Germany, Plümper and Schimmelfennig (2007: 115) as well as Jungbauer-Gans and Gross (2013) find virtually no effects of informal networks on tenure after controlling for publications. This could lead one to assume that success in German academia is less influenced by personal networks than in American and French academia.

3. Data and methods

We test the above-mentioned theories by using event history models on a unique panel dataset that covers full career profiles of virtually all sociologists currently employed (i.e., in 2013) at a German university, including all doctoral students, postdocs, tenured and untenured faculty members. Based on a list of all German universities and two research institutes, we identified 77 sociology departments and coded CV information and publications from the personal web pages of all faculty members who have at least one publication. In rare cases, the university had no sociology department, but a larger social science department. In these cases, we collected the data of the sociology chairs and their associated colleagues. To produce a coherent timeframe, we did not include faculty members who obtained their PhD prior to 1980.⁴ We collected all publications either until the year the respective individual got a tenured position as a professor or until the study's timeframe ended (the year 2013). This yields an unbalanced panel dataset, in which the number of entries per sociologist equals the number of publications until the event occurs (getting tenure) or until the timeframe ends. Hence, our dependent variable is the time duration from year of the first publication to the appointment as a tenured professor. We argue that the year of first publication is a good indicator for the start of a "race to a professorship." While it is true that many get a PhD without desiring an academic career, publishing scientifically is a necessary condition for a professorship, and puts an individual "at risk" to eventually become a professor. In any case, the results presented below do not change if we define time duration from the year when the PhD was obtained, instead of from the year of the first publication onwards (additional calculations available from the authors).

The authors and four research assistants coded the data from March to December 2013. Codings were double-checked by a second coder. Subsequently, the authors performed validity checks on the data to correct coding errors. We also performed intercoder reliability tests, which showed no significant differences in results between coders.⁵ Some faculty members do not provide their full list of publications, but an incomplete "selected" list. In these cases, we coded a dummy variable for that person to estimate and control for incompleteness in our regression models (see below).

The final dataset contains 28,545 publications by 1260 sociologists (of whom 41.7 percent are female). Of these sociologists, 530 are PhD students (46.6 percent female), 433 have a postdoctoral position (42.9 percent female), including 36 employed junior professors (47.2 percent female). Of the 1260 individuals, 297 have received a tenured position as university professor (31.6 percent female). Of those who mentioned that their first tenured professorship was a "W2" (or formerly "C3") professorship, which is comparable to an associate professor in the U.S. system, women represented 46 percent. Of those who mentioned that their first tenured position was a "W3" (formerly "C4") professorship, which

⁴ The academic labor market arguably was much different prior to 1980 with respect to job chances, publication habits, and other criteria.

⁵ Results of these tests are available from the authors.

Table 1

Descriptive statistics of all variables used in this study.

Variable	Mean	Std. Dev.	Min	Max
SSCI journal articles	1.57	2.92	0	26.67
Non-SSCI articles	3.57	5.66	0	80.63
Books	1.33	1.57	0	9.67
Edited volumes	0.75	1.47	0	12.85
Book chapters	7.68	10.83	0	96.20
Gray literature	3.90	7.07	0	68
Female	0.42	0.49	0	1
Prestige graduation	10.21	2.14	3	14
Prestige doctorate	9.88	1.81	3	14
Prestige habilitation	9.71	1.11	3	14
Awards	0.20	0.69	0	9
Months abroad	24.82	61.53	0	540
Studied abroad	0.18	0.39	0	1
Doctorate abroad	0.04	0.19	0	1
International publications	4.69	8.90	0	101
Mobility	1.99	1.83	0	13
Interim professor	0.34	0.77	0	7
Department size	6.85	4.14	1	20
Incomplete	0.11	0.32	0	1
Co-authors	15.73	26.15	0	404
Open positions	15.24	5.85	5	27
Habilitation	0.86	2.30	0	25
Habilitation (squared)	6.03	27.70	0	625
Assistant professor	0.18	0.95	0	10

Note:

Statistics refer to the person level ($n = 1260$), based on 28,545 publication-person data.

is comparable to full professorship in the U.S., 21 percent were women.⁶

3.1. Variables

Table 1 presents descriptive information on all variables used. We measure human capital by the accumulated number of publications at time point t . We distinguish between six publication types. First, the variable *SSCI journal articles* covers the total number of double-blind peer-reviewed articles a person has published at time t in a journal listed by the Social Science Citation Index (SSCI).⁷ Second, the variable *Non-SSCI articles* measures the same for non-SSCI journals. Third, *Books* covers all monographs, textbooks, published dissertations and habilitation theses. The fourth and fifth variables are *Edited volumes* and *Book chapters*, which measure the equivalent in terms of edited books and book chapters, respectively. Sixth, the variable *Gray literature* comprises all remaining publications, including reports, working papers, book reviews, etc.

To account for the fact that co-authored publications should not count as much as single-authored ones, we adjust each publication by the formula $p = 2/(n + 1)$, where n is the number of authors.⁸ The

⁶ However, only in 46 percent of all cases did scholars indicate what sort of tenured professorship they had, so we do not differentiate between W2/C3 or W3/C4, as all these are tenured professorships.

⁷ SSCI journals are typically more competitive and of higher academic quality than non-SSCI journals (on selection criteria, see: <http://wokinfo.com/essays/journal-selection-process>). In sociology, all top-tier journals are listed by the SSCI. By differentiating publications by type (SSCI, non-SSCI, books, etc.), we are able to discriminate between different ways of academic performance.

⁸ We believe that this is a robust account of measuring individual academic performance when publishing with co-authors. One could also distinguish lead and non-lead authorship. Information on lead authorship, however, is difficult to obtain because of a) the norm to publish in alphabetical order, and because b) first authorship sometimes depends on hierarchy rather than actual individual contribution (e.g., the project's principal investigator or the team's most reputable person, usually a full professor, is designated as first/lead author). In these cases, distinguishing between first author (lead authorship) and non-first author could produce bias. A compromise is to put greater weight on single authorship (because it is clear who is lead author), which the formula does. To further assess the robustness of this

value p shows how much each publication counts. Thus, being the sole author of a publication counts as 1, being a co-author counts as .67, being one of three author's counts as .5, being one of four authors counts as .4, and so on.

We operationalize symbolic capital by the following variables: First, *Prestige graduation*, *Prestige doctorate*, and *Prestige habilitation* capture symbolic capital from institutional affiliations and measure the prestige of a department with which a sociologist has been associated during his or her career. To generate a prestige score, we rely on ranking data of sociology departments provided by the German Council of Science and Humanities in 2005, which is widely considered the most reliable ranking of sociology departments in Germany (for details, see: Münch and Baier, 2009; Wissenschaftsrat, 2008). We apply the overall index score of the ranking to the department at which a sociologist obtained his or her master degree, doctorate, and postdoctoral qualification. For missing data and non-rated institutions, we take the overall mean.⁹

Second, *Awards* accumulates all academic awards listed on the CV, including best-paper, best-graduation, or general awards from professional associations. We assume that the number of awards measures symbolic capital because each award increases an individual's academic reputation. Controlling for performance and human capital, we expect this measure of reputation to influence the odds for tenure success.

The third group of variables are *Months abroad*, *Studied abroad*, *Doctorate abroad*, and *International publications*; they measure accumulated transnational symbolic capital (Gerhards and Hans, 2013). *Months abroad* is the number of months spent abroad, either during undergraduate or graduate studies or later during doctoral or postdoctoral research.¹⁰ The dummy variable *Studied abroad* controls for international experience at the undergraduate or graduate level. *Doctorate abroad* is a dummy that measures whether the person received his or her doctorate at a non-German institution. *International publications* are the number of publications written in English and thus reflects international visibility.

We operationalize social capital through four measures. The first is *Mobility*, which is the sum of the number of institutions someone has been attached to at each point of his or her career. We assume that the more institutions someone was working at, the more professional, work-related relationships this person could establish, which should increase the odds of tenure (Bäker, 2015). While we do not measure the quality of these relations, we assume with Granovetter (1973) that beneficial effects increase with a larger network. The second social capital measure is *Interim professor*, which is the accumulated number of times someone temporarily substituted for a full professor. An interim professorship (the German *Vertretungsprofessor*) is a non-tenured, short-term faculty position at which an advanced postdoc (often from a different university) takes over responsibilities as a full professor, usually for one or two semesters. We assume that the more positions a person has held as an interim professor, the larger that candidate's work-related network is and the better the chances for getting tenure become. *Department size* measures the total number of fully tenured professors at the department where the person

received his or her doctorate.¹¹ We assume that the larger the department, the larger is the number of the potential professional relationships someone can draw on for getting a job. *Co-authors* measures the accumulated number of co-authorships at each career phase, based on prior publications. We assume that the social capital of a person is higher if the number of prior collaborators is larger.

3.2. Controls

We use the dummy variable *Incomplete* to control for the problem that arises when people have not posted all their information on the web. We assigned it to persons who only posted a selection of their publications (usually under the heading “selected publications”). This applies to 11% of all coded persons. Including this information in the regression models enables us to rule out possible bias caused by the underreporting of data. As we show below, the results remain essentially the same if we drop all incomplete cases (see Model 1 in Table 4 for details). *Open positions* measures the number of open professorship positions filled per year, and lagged by one year. It was calculated from our own dataset. In controlling for the number of open positions per year, we take the opportunity structure of the labor market into account. This is important because the number of open positions varies substantially across time. Notably, only about four positions per year were filled in the 1980s and 1990s, a figure that rose to about 25 per year after 2000. The reason is a wave of retirements after 2000, resulting from the expansion of academic education in the 1970s, when many universities were created and the number of sociology chairs increased significantly. The variables *Habilitation* and *Assistant professor* represent the number of years since a sociologist achieved his or her habilitation or started a position as a junior professor. Both variables measure academic seniority and job experience, which should both increase the chances for tenure. We do not control for grant money, for example from the German Research Foundation (DFG), as it provides an input into the research process. If effective, grants should result in increased output, which we measure directly through the number of publications (Gerhards, 2002: 32; Münch, 2006: 472). Accordingly, empirical studies have found no effect of grant funding on the odds of getting tenure, after controlling for publications (Plümper and Schimmelfennig, 2007: 111). We also do not measure academic merit through quantity and quality of teaching. While both probably influence tenure, we do not think that either should differ between candidates in a systematic way so as to bias our results. This is because the quantity of teaching in German academia is largely set by law, depending on one's working contract. The most conceivable way the quantity of teaching could have an effect beyond this is when people publish more in order to get positions where they have to teach less. Thus, this variable should be endogenous to our publication variables.¹² Second, regarding the quality of teaching, studies analyzing student ratings suggest no systematic differences between courses led by males or females (Feldman, 1993; Marsh, 2007; Wolbring, 2013). Thus, while we believe that teaching influences hiring decisions, it is unlikely that this systematically biases the results we present below.

measure, Table S1 and S2 (supplementary file) replicate the main analysis using a) an additional single-author dummy (Table S1), and b) the unweighted sum of publications (Table S2). As can be seen, results do not change, suggesting robustness of the main approach.

⁹ We had to replace missings for 20.1 percent of all cases of where people studied, 27.6 percent (received PhD) and 23.5 percent (wrote habilitation).

¹⁰ If a researcher listed an unspecific time range rather than providing the actual months (i.e., May 2013–June 2014 vs. 2013–2014), we estimated the number of months of a regular academic year, minus usual vacation time. That means that we counted 10 months if an author reported a year range (like 2013–2014) and 5 months if an author reported a semester range (like “spring 2013”).

¹¹ We take the current department for PhD students. In case of missing data, we replace missings by the overall mean (applies to 55 persons).

¹² Only 83 of our 1260 sociologists are not employed at a university, but at a non-university research institute. We thus have reason to assume that almost all of them have similar teaching obligations at each career step.

4. Results

4.1. Descriptive results

Table 2 shows what characterizes sociologists at the time they receive tenure. By the time sociologists get their first permanent position as a university professor, 15.54 years have passed on average since their first publication. They have published an average of 3.99 SSCI journal articles, 7.87 non-SSCI articles, 2.58 monographs, 1.74 edited volumes, 17.06 book chapters, and 7.94 “gray” publications. On average, 9.46 of these publications are in English. At the time of hiring, a typical sociologist has received 0.37 academic awards and spent 40 months abroad. In 6 percent of all cases, the sociologist wrote his or her dissertation in a foreign country. Upon receiving tenure, the average sociologist has 3.3 documented changes of location and has acted as interim professor 0.8 times. The accumulated number of co-authors is about 27, and in 75 percent of all cases, the sociologist has written a habilitation thesis.

However, large standard deviations from the mean indicate that many researchers have done much more or much less than these averages imply. For instance, 21.6 percent of all tenured professors have no SSCI journal article, and 19.2 percent do not have any English-language publication. Table 2 also shows significant differences between men and women. The time period between the first publication and a tenured appointment is, on average, two years longer for men. However, by the time men do get tenure, they have published 1.8 times as many SSCI-articles (significant at $p < .001$), 1.7 times as many non-SSCI articles ($p < .001$), 1.4 times as many books ($p < .001$), 1.3 times as many edited volumes ($p < .1$), 1.4 times as many book chapters ($p < .01$), and 1.8 times as much “gray” literature as women ($p < .01$). Men also have a higher number of co-authors ($p < .05$). Women, however, accumulate an average of 0.52 awards, which is about 1.7 times more than men ($p < .1$). Apart from these differences, men and women are similar when getting their first tenured professorship, as the *t*-test results show. For example, they do not exhibit a significant difference in their international experience, mobility, or habilitation status. The next section shows what actually determines tenure, based on these variables.

4.2. Regression models

Table 3 presents the results of a series of nested Cox regressions (Cox, 1972), which estimate the factors that increase or decrease the odds that the event of interest occurs, that is, that a researcher gets a tenured position. We display the hazard ratios to facilitate the interpretation of results. This implies that an effect is positive if the hazard ratio is above 1, and negative if below 1. The models use robust, panel-corrected standard errors clustered by persons to adjust for non-independence of observations (Lin and Wei, 1989). In addition, the models rely on the Efron method for tied events, which is widely considered the most appropriate (Cleves et al., 2004: 143). We use logged values for publication measures and other independent variables. This accounts for possible nonlinear effects and decreasing marginal returns of publications, as, for example, having 14 publications instead of 10 is probably less consequential than having 4 publications instead of none. We also provide non-logged results in Table A1 in the appendix.¹³

Model 1 in Table 3 is a baseline model that includes all control variables. Model 2 adds the human capital measures. Models 3 through 6 subsequently add non-meritocratic predictors from

the remaining three theoretical approaches. As can be seen from Model 1, the control variables are mostly in line with our expectations. Incomplete information shows a significant effect in terms of tenure success, as tenured professors often do not list all of their publications on their websites. Interestingly, the number of open positions does not affect the chances of being hired. Unsurprisingly, the years after one's habilitation or appointment as a junior professor lead to tenure, since tenure is usually awarded after a habilitation or a junior professorship. The significant squared term demonstrates an inverse u-shaped relationship between years since habilitation and tenure: getting tenure is likely in the years after the habilitation, but only up to a certain threshold. If one does not get tenure in the first seven years after completing a habilitation,¹⁴ chances to get tenure substantially decrease with each additional year.

Model 2, which includes the human capital variables, confirms that productivity in the form of publications leads to tenure. However, this is not equally true for all types of publications. The number of SSCI journal articles especially increases the chances of becoming tenured: each unit increase in the log of an SSCI article boosts tenure chances by a factor of 1.866, that is, by 86.6 percent. Note that a log increase from 0 to 1 equals an increase from 0 to about 2 publications; a log increase from 1 to 2 equals an increase from 2 to about 6 articles, and so on. The linear, non-logged estimation (Table A1) shows that each additional SSCI article increases the odds for tenure by about 11 percent, holding everything else constant.¹⁵ Books and edited volumes have positive but weaker effects (about 45 and 35 percent increased chances, respectively, with each log increase—corresponding to about 12 and 5 percent, respectively, for each additional publication in the non-logged model). Publishing book chapters is only significant at the .1-level. Interestingly, publishing articles in non-SSCI journals does not affect the “hazard” for tenure, while publishing gray literature (such as reports, etc.) even has a significantly negative effect.

Model 3 adds the ascriptive variable “female.” The variable's hazard ratio of 1.44 indicates that – among men and women with the same number and types of publications – women have a 44 percent higher chance to get tenure. This fits the descriptive statistics above, which indicate that women get their first tenured position slightly earlier than men, while men publish between 1.3 and 1.8 times more than women (depending on publication type). As the subsequent models show, adding more predictors does not alter this result. We present additional findings on this gender difference below.

Model 4 adds variables that indicate symbolic capital. It shows that the prestige of the university where someone graduated, received a doctorate or a habilitation, does not affect the odds of receiving tenure. However, the prestige of a candidate's post-doctoral institution becomes significant if we do not control for publications and English-language publications.¹⁶ This suggests that institutional prestige indirectly affects tenure success, insofar as it goes along with more publications. By contrast, winning awards strongly increases the chances for tenure. Therefore, the

¹⁴ This is the result of a model prediction based on Model 6 in Table 3 (available upon request). We also estimated a squared term for years of being assistant professor, but did not find the same inversely u-shaped relationship. This is because the German junior professor is a relatively new position (the first were established in 2002), which means that, at this point due to lack of cases, it is too early to judge whether a nonlinear relationship occurs in these career trajectories as well.

¹⁵ In an additional analysis not shown but available upon request, we weighted each SSCI article by the impact factor of the respective journal. The weighted SSCI effect shows a still significant, but slightly smaller effect, suggesting that the impact factor does not matter, as long as one publishes in an SSCI-rated journal.

¹⁶ Details are available from the authors.

¹³ Assuming linear relations, however, is a more restrictive model, yielding a lower model fit and partly poorer estimation results.

Table 2
What characterizes sociologists who just got tenure?

	Overall	Men	Women	T-test sig.
	Mean (St. Dev.)	Mean (St. Dev.)	Mean (St. Dev.)	
Years to professorship	15.54 (5.00)	16.19 (4.79)	14.24 (5.19)	***
SSCI journal articles	3.99 (4.40)	4.68 (4.96)	2.62 (2.49)	***
Non-SSCI articles	7.87 (6.66)	9.13 (7.14)	5.36 (4.68)	***
Books	2.58 (1.74)	2.86 (1.93)	2.02 (1.07)	***
Edited volumes	1.74 (1.95)	1.88 (2.02)	1.44 (1.78)	+
Book chapters	17.06 (12.79)	18.89 (13.57)	13.39 (10.17)	**
Gray literature	7.94 (10.62)	9.34 (12.13)	5.14 (5.73)	**
International publications	9.46 (12.58)	9.76 (13.33)	8.85 (10.97)	
Awards	0.37 (0.89)	0.30 (0.84)	0.52 (0.96)	+
Months abroad	39.96 (79.93)	37.91 (80.59)	44.07 (78.94)	
Studied abroad	0.12 (0.32)	0.10 (0.31)	0.15 (0.36)	
Doctorate abroad	0.06 (0.24)	0.05 (0.22)	0.09 (0.28)	
Mobility	3.29 (2.12)	3.29 (1.98)	3.29 (2.39)	
Interim professor	0.84 (1.10)	0.85 (1.09)	0.82 (1.13)	
Department size	7.93 (4.40)	7.99 (4.42)	7.80 (4.39)	
Co-authors	27.24 (26.4)	30.06 (27.65)	21.6 (22.85)	.
Habilitation	0.75 (0.44)	0.77 (0.42)	0.69 (0.47)	
N	243	162	81	

Notes:

* Mean differences between men and women significant at $p < 0.1$ (two-sided tests).

* Mean differences between men and women significant at $p < 0.05$ (two-sided tests).

** Mean differences between men and women significant at $p < 0.01$ (two-sided tests).

*** Mean differences between men and women significant at $p < 0.001$ (two-sided tests).

Cases with incomplete publications ($n = 54$) were dropped.

prestige of one's university does not affect tenure, but the individual reputation generated through accumulating academic awards does. Remarkably, the number of awards is the second strongest predictor after SSCI journal article publications.

Model 5 adds variables that specify transnational symbolic capital. Interestingly, none of these affect the hazard of receiving tenure. However, the number of months spent abroad becomes significant at the 10 percent level if we drop publications and all other transnational variables from the models. Spending time abroad may therefore have an effect on publication success, which eventually yields a tenured position.¹⁷ Spending time in English-speaking countries or graduating from English-speaking universities has a similar effect.

Model 6 adds the social capital variables, showing that personal mobility and department size positively affect the hazard of tenure, while taking up an interim professorship does not. Co-authorship also has no effect: sociologists who publish more often in teams have the same chance of getting tenure as those who publish more often as single authors. Mobility and department size suggest that the larger the professional network of a candidate, the

more likely that person is to get a tenured position, all else being equal.

Table 4 presents alternative specifications to explore further issues and to test for the robustness of the main findings. Model 1 shows that there are essentially no differences in the results if we drop the incomplete cases. Model 2 adds a dummy variable controlling for the year prior to and the year after 2002—when several new features to the German academic system were introduced. As can be seen, the results do not differ from those presented above. In other words, what counted in getting a professorship prior to the year 2002 also counts afterwards (we report results of interaction effects with time below).

Models 3 through 6 in Table 4 deal with different aspects of the gender effect. Using survey data, Jungbauer-Gans and Gross (2013: 86) show that women in sociology are more than twice as likely (plus 117 percent) as men to get tenure, after controlling for publications. They argue that this is the case because women are disproportionately appointed to gender studies chairs. In other words, their advantage results from specialization, which can lead to benefits in the labor market (Leahey, 2006, 2007; Leahey et al., 2008). To test whether specialization plays a role, we looked at who got tenure for a professorship affiliated with gender studies. Indeed, while only 2 out of 203 tenured men were appointed to a gender studies chair, 12 out of 94 tenured women received such an appointment. Thus, women are more successful in being appointed

¹⁷ There is also a positive correlation between months spent abroad and English publications ($r = .29$, $p < .0001$), as well as between months spent abroad and SSCI-journal publications ($r = .19$, $p < .0001$). See Table S3 for a correlation matrix.

Table 3
Main results: Cox regressions on the hazard of getting a tenured position.

	(1)	(2)	(3)	(4)	(5)	(6)
	Controls only	Publications added	Gender added	Symbolic capital added	Transnational capital added	Social capital added
SSCI journal articles (ln)		1.866*** (8.016)	1.923*** (8.044)	1.853*** (7.373)	1.728*** (5.937)	1.687*** (5.670)
Non-SSCI articles (ln)		0.981 (−0.200)	0.997 (−0.027)	0.993 (−0.067)	0.997 (−0.028)	0.998 (−0.022)
Books (ln)		1.450* (2.568)	1.519** (2.788)	1.565** (2.942)	1.665*** (3.348)	1.631** (3.183)
Edited volumes (ln)		1.350* (2.738)	1.373** (2.858)	1.394** (2.979)	1.361** (2.824)	1.333** (2.633)
Book chapters (ln)		1.206* (1.792)	1.190* (1.669)	1.197* (1.749)	1.207* (1.820)	1.171 (1.344)
Gray literature (ln)		0.846* (−2.510)	0.856* (−2.306)	0.853* (−2.293)	0.845* (−2.387)	0.851* (−2.284)
Female			1.440* (2.503)	1.439* (2.542)	1.403* (2.386)	1.412* (2.438)
Prestige graduation (ln)				0.866 (−0.483)	0.870 (−0.469)	0.735 (−0.966)
Prestige doctorate (ln)				0.782 (−0.832)	0.753 (−0.942)	0.667 (−1.304)
Prestige habilitation (ln)				1.149 (0.438)	1.193 (0.540)	1.254 (0.669)
Awards (ln)				1.650*** (3.295)	1.605** (3.127)	1.506* (2.571)
Months abroad (ln)					1.047 (1.216)	1.017 (0.410)
Studied abroad					1.281 (1.504)	1.163 (0.885)
Doctorate abroad					1.121 (0.498)	1.111 (0.465)
International publications (ln)					1.059 (0.771)	1.083 (0.992)
Mobility (ln)						1.380 (2.529)
Interim professor (ln)						0.941 (−0.413)
Department size (ln)						1.230* (1.872)
Co-authors (ln)						0.996 (−0.055)
Incomplete	1.620** (2.891)	1.785*** (3.304)	1.861*** (3.547)	1.934*** (3.697)	1.916*** (3.625)	1.956*** (3.732)
Open positions (ln)	1.027 (0.253)	1.160 (1.298)	1.127 (1.025)	1.113 (0.918)	1.085 (0.710)	1.074 (0.615)
Habilitation	1.830*** (6.852)	1.553*** (5.766)	1.565*** (5.751)	1.551*** (5.590)	1.565*** (5.637)	1.556*** (5.417)
Habilitation (squared)	0.953*** (−4.219)	0.965*** (−3.869)	0.964*** (−3.874)	0.965*** (−3.768)	0.964*** (−3.797)	0.964*** (−3.689)
Assistant professor (ln)	2.780*** (7.110)	2.352*** (5.411)	2.221*** (5.075)	2.304*** (5.411)	2.230*** (5.073)	2.263*** (5.545)
Pseudo R ²	0.060	0.091	0.094	0.097	0.099	0.103
Log-likelihood	−1533.089	−1481.678	−1478.266	−1472.024	−1468.757	−1463.396
Degrees of freedom	5	11	12	16	20	24
Chi ²	183.295	293.512	298.958	302.158	327.770	346.278
AIC	3076.178	2985.356	2980.532	2976.047	2977.513	2974.791
BIC	3117.474	3076.207	3079.643	3108.195	3142.698	3173.013
Number of Events (tenure)	297	297	297	297	297	297
N (persons)	1260	1260	1260	1260	1260	1260
N (persons-publications)	28,545	28,545	28,545	28,545	28,545	28,545

Notes:

Exponentiated coefficients (hazard ratios); *t* statistics in parentheses; ln = logged values.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

*** $p < 0.001$.

to gender studies chairs, which might explain the overall gender difference in hiring. To test this, Model 3 in Table 4 changes the dependent variable, focusing only on who got tenured for a chair that was not in gender studies (thereby dropping 14 cases). As can be seen, women are still 36 percent more likely to be appointed than

men, even to positions outside of gender studies. Thus, only part of the higher female odds can be explained by a disproportionate recruitment to chairs in gender studies.

Since women are more likely than men to get a full professorship with the same number of publications, a similar

Table 4
Robustness tests and gender effects.

	(1)	(2)	(3)	(4)	(5)	(6)
	Full model, incomplete cases dropped	Post2002 dummy added	Non-gender studies chairs	Cumulative female advantage	Men only	Women only
SSCI journal articles (ln)	1.643*** (4.883)	1.680*** (5.631)	1.727*** (5.766)	1.702*** (5.711)	1.842*** (5.714)	1.782** (2.913)
Non-SSCI articles (ln)	1.080 (0.727)	0.998 (-0.023)	1.018 (0.180)	1.005 (0.050)	0.953 (-0.423)	0.987 (-0.074)
Books (ln)	1.683** (2.909)	1.623** (3.143)	1.560** (2.867)	1.546** (2.862)	1.375* (1.927)	3.274** (3.102)
Edited volumes (ln)	1.381** (2.578)	1.336** (2.653)	1.335** (2.585)	1.407** (3.056)	1.215 (1.610)	2.651*** (3.950)
Book chapters (ln)	1.174 (1.137)	1.167 (1.316)	1.169 (1.305)	1.221* (1.705)	1.292* (1.899)	0.757 (-1.003)
Gray literature (ln)	0.868* (-1.774)	0.853* (-2.234)	0.848* (-2.304)	0.849* (-2.303)	0.824* (-2.420)	0.861 (-1.083)
Female	1.404* (2.200)	1.422* (2.478)	1.355* (2.028)	1.570** (3.242)		
Prestige graduation (ln)	0.861 (-0.443)	0.729 (-0.986)	0.883 (-0.382)	0.716 (-1.044)	0.665 (-1.036)	0.717 (-0.664)
Prestige doctorate (ln)	0.681 (-1.101)	0.669 (-1.287)	0.556* (-1.920)	0.756 (-0.888)	0.324** (-2.984)	1.054 (0.095)
Prestige habilitation (ln)	1.196 (0.447)	1.258 (0.682)	0.965 (-0.107)	1.158 (0.443)	1.102 (0.232)	1.969 (1.354)
Awards (ln)	1.438* (2.191)	1.517** (2.608)	1.409* (2.071)	1.491* (2.525)	1.067 (0.292)	3.595*** (5.131)
Months abroad (ln)	1.045 (0.999)	1.015 (0.374)	1.011 (0.275)	1.021 (0.509)	1.018 (0.381)	0.977 (-0.322)
Studied abroad	1.182 (0.889)	1.163 (0.878)	1.181 (0.949)	1.246 (1.343)	1.306 (1.236)	1.040 (0.134)
Doctorate abroad	1.047 (0.173)	1.123 (0.513)	1.116 (0.476)	0.981 (-0.085)	0.806 (-0.890)	1.806 (1.346)
International publications (ln)	1.091 (0.984)	1.087 (1.047)	1.101 (1.177)	1.109 (1.289)	1.127 (1.285)	1.182 (1.137)
Mobility (ln)	1.380 (2.263)	1.380 (2.539)	1.388* (2.529)	1.402** (2.715)	1.435* (2.466)	1.402 (1.437)
Interim professor (ln)	0.862 (-0.954)	0.938 (-0.437)	0.944 (-0.383)	0.852 (-1.088)	0.895 (-0.634)	1.086 (0.305)
Department size (ln)	1.222* (1.660)	1.226* (1.842)	1.276* (2.114)	1.210* (1.706)	1.291 (1.980)	1.781 (2.181)
Co-authors (ln)	0.982 (-0.193)	0.996 (-0.046)	0.987 (-0.161)	1.001 (0.009)	0.945 (-0.575)	1.064 (0.350)
Incomplete		1.965*** (3.774)	1.916*** (3.556)	1.838** (3.250)	1.831** (2.948)	2.884*** (3.301)
Open positions (ln)	1.183 (1.260)	1.193 (1.122)	1.059 (0.490)	1.100 (0.821)	1.114 (0.792)	0.855 (-0.696)
Habilitation	1.653*** (4.999)	1.558*** (5.446)	1.558*** (5.200)	1.546*** (5.636)	1.428*** (4.597)	2.455*** (3.810)
Habilitation (squared)	0.958*** (-3.434)	0.964*** (-3.708)	0.965*** (-3.413)	0.966*** (-3.815)	0.974** (-3.062)	0.915** (-2.873)
Assistant professor (ln)	2.111*** (4.763)	2.293*** (5.589)	2.267*** (5.404)		2.233** (2.911)	2.435*** (4.295)
Post2002		0.845 (-0.855)				
Pseudo R ²	0.108	0.103	0.106	0.094	0.096	0.216
Log-likelihood	-1151.987	-1463.096	-1383.249	-1477.323	-921.057	-336.677
Degrees of freedom	23	25	24	23	23	23
Chi ²	288.718	347.519	344.020	286.815	229.218	210.934
AIC	2349.973	2976.192	2814.498	3000.647	1888.114	719.354
BIC	2537.489	3182.673	3012.241	3190.609	2069.716	881.986
Number of Events (tenure)	243	297	283	297	203	94
N (persons)	1117	1260	1246	1260	734	526
N (persons-publications)	25,664	28,545	27,981	28,545	19,846	8699

Notes:Exponentiated coefficients (hazard ratios); *t* statistics in parentheses; ln = logged values.+ *p* < 0.1.* *p* < 0.05.** *p* < 0.01.*** *p* < 0.001.

effect might exist for getting an assistant or junior professorship. In that case, a woman's advantage would accumulate, first by getting a junior professorship, and subsequently by preferential access to a full professorship. Model 4 checks this

effect by not controlling for years spent as a junior professor. Indeed, by not controlling for who becomes a junior professor in the first place, the regressions show that women have a 57 percent higher chance of becoming a tenured

professor than men, controlling for productivity and all other factors.¹⁸

The results above suggest that getting tenure is related to different characteristics for women and men. Models 5 and 6 therefore replicate the full model separately for men and women. As can be seen, the road to success indeed differs in important respects for the two genders. For men, the strongest predictor is publishing in SSCI journals. Books and book chapters count as well, but to a lesser degree ($p < .1$). Edited volumes do not matter, and gray literature is even detrimental for tenure. Apart from academic productivity, social capital (mobility and department size) show significant effects.¹⁹ Strikingly, the institutional prestige of the university where men get their PhDs negatively impacts their chance for tenure. If we do not control for productivity, however, this effect becomes insignificant.²⁰ For women, SSCI articles also strongly increase chances for tenure, but other factors are more reliable, notably publishing books and edited volumes (see the t -statistics). This might be explained by specialization: women specialize more often in fields like gender studies, which is largely a qualitative field, in which scholars are more prone to publish books than peer-reviewed articles.

Women's strongest predictor for tenure is – by far – the accumulated number of academic awards. An increase in the log of awards increases women's chances for tenure by a factor of 3.595, or by 360 percent. In the non-logged model (Table A1), this amounts to a 67 percent increase in the chances for tenure with every additional award. This is a sharp difference to the results for men, for whom winning academic awards does not count at all.

In sum, while for men the number of SSCI journal articles is the most important predictor in getting a tenured position, for women it is individual reputation, the publication of edited volumes, books, SSCI articles, and, to a lesser degree, department size.

It is conceivable that the effects which we have found change over time. Table A2 in the appendix tests this. The table examines interaction effects between the post 2002 dummy, which splits our dataset in two roughly equal halves, and the logged number of SSCI articles, monographs, awards, as well as the female dummy. The results show that the main findings remain unaffected and robust when we do control for these interactions. Additionally, while the interaction effects themselves are insignificant, their main effects now display the predictor effect when the post 2002 dummy is zero, e.g., the effect in the years prior to 2002. As can be seen in Model 2, SSCI articles were still a significantly strong effect before 2002, but less strong than the overall effect (compare to Model 1). By contrast, published books mattered slightly more (Model 3), and the number of awards did not count at all prior to 2002 (Model 4). Notably, the female effect (1.893 in Model 5) was even stronger in the 1990s than it is overall (compare to Model 1). It seems plausible that the increase in importance of publishing in peer-reviewed journals vs. publishing books as well as the decrease of the female effect might point to overall changes to a more merit-based system that was intended by the 2002 act. Regarding the time-decreasing gender effect, saturation seems also plausible. After decades of affirmative action policies, and actual increases in the number of female professorships, the effect of favoring women could be in decline.

5. Conclusions

Based on large-scale career data of an almost full population of sociologists in German academia, this study has aimed to elucidate the career patterns that lead to tenure. In this section, we highlight our main results and discuss how they advance knowledge on the determinants of academic career success. First, our results indicate the importance of publishing in SSCI-rated journals, which is the strongest and most reliable predictor for tenure success. Publishing non-SSCI articles has no effect and publishing gray literature is even detrimental to becoming a tenured professor. It is also important to publish books and, to a lesser degree, edited volumes. Book chapters have a very small effect. This implies German sociology is indeed meritocratic in the sense that scholarly publications increase chances of getting tenure. With this finding, we confirm the results of prior studies, but additionally show what types of publications matter most.

Second, in terms of ascription, our results do not support theories of female disadvantage. Women whose publications, years of experience, as well as social and symbolic national and international capital equal that of men, are about 1.4 times more likely to get a professorship than men. This result is contrary to what prior research suggests (Fotaki, 2013) but is in line with others (Jungbauer-Gans and Gross, 2013; Plümper and Schimmelfennig, 2007; Williams and Ceci, 2015). Our effect, however, is weaker than that of Jungbauer-Gans and Gross (2013: 86), who document that women are 2.17 times more likely than men to get tenure, controlling for a number of confounding factors. We suggest that this is the case because prior research has not taken longitudinal data into account, but used a sample of “surviving” postdocs (Jungbauer-Gans and Gross, 2013; Plümper and Schimmelfennig, 2007).

The positive female effect might result from several formal and informal affirmative action norms that influence the hiring process. First, universities have committed themselves to increase the share of female professors in Germany, and each job announcement carries a gender equality statement. Second, part of each hiring committee is an equal opportunity commissioner for gender issues, who is trained in advocating female candidates, and who is able to stop or delay the process if there is suspicion that gender issues are not sufficiently addressed. Third, state-funded programs pay special funds to universities if they hire female professors. Thus, while potentially unintended by individual hiring committees – who usually are committed to find the best candidate – the overall effect is that women need on average fewer publications to get tenure compared to men.

While Jungbauer-Gans and Gross argue that women may have higher odds of getting a professorship because they specialize on gender topics and have therefore preferential access to chairs in gender studies, we show that this explains only part of the story. Indeed, 12 out of 94 women who got tenure landed a position devoted to gender studies, compared to 2 out of 202 men. However, for chairs in fields other than gender studies, women are still 36 percent more likely to get tenure, after controlling for everything else. The regressions additionally show that the female advantage in getting a professorship grows from junior to tenured professorships. Women have 57 percent higher odds for tenure if years spent as an assistant professor are not taken into account. Moreover, we find that symbolic capital (measured by the number of academic awards) is the strongest predictor for women, but does not influence men's odds to get a tenured professorship. Hence, our findings contradict the so-called “Matilda-Effect” (Lincoln et al., 2012), according to which academic achievements are valued less for women than for men.

Third, our results show that institutional prestige does not directly influence academic success in German sociology. This is

¹⁸ In an additional analysis not shown, but available upon request, we separately analyze gender effects on first positions either as full (W3/C4) or associate professors (W2/C3). It turns out that women have a (statistically significant) 65% higher chance than men of becoming tenured as an associate professor, while their chance is about 20% higher for full professorships.

¹⁹ However, the results are not very robust, as they become insignificant in the non-logged model (Table A1).

²⁰ This may be because the most prestigious universities also produce the largest numbers of PhDs per year, of which the majority will not stay in academia.

contrary to the situation in the United States, where a stratified academic system generates rankings of institutional status that exist independently of academic merit (Burris, 2004). In Germany, where a sociologist graduated and received a doctorate or a habilitation does not affect odds for tenure, after controlling for personal productivity—at least with regard to the measure used here. Since this measure is time-invariant, however, and thus builds on the assumption that reputation is stable over time, its reliability might be limited. However, since our result is in line with research in other disciplines that uses other types of data (Baier and Münch, 2013; Jungbauer-Gans and Gross, 2013), the measure's time-invariance could be a minor limitation, especially since reputation orders may have long-lasting cognitive and self-reinforcing effects (Gould, 2002). Future research, however, should use longitudinal reputation data to see whether our finding can be confirmed.

Fourth, our results shed light on whether social capital influences tenure. While studies of the private sector have shown that hiring people through social networks can be beneficial (Fernandez and Weinberg, 1997), studies of U.S. academia show the opposite (Rothgeb, 2014: 184). We have found comparably small but positively significant effects of social capital on the odds of getting tenure. However, the strongest predictor for tenure are publications that have undergone a double-blind peer review process, which is most removed from the influence of social networks because these publications are, by definition, reviewed anonymously.

Finally, our results show that affirmative action policies are not only symbolic lip service, but do seem to actually increase women's chances in academia, at least in German sociology. However, they also show that women get tenure with fewer publications, and therefore each of their publications is more strongly rewarded in terms of tenure, as compared with men. Hence, hiring decisions should not be made on the assumption that a productive woman is more easily overlooked than a productive man at the point of hire.

While we hope that our study answers relevant open questions, it leaves others unanswered. First, though we are able to measure productivity in academia in a generally accepted way, it remains to be seen whether our results are indicative of other academic disciplines or even general labor market trends. For instance, other disciplines might have much clearer standards on what counts as academic quality publications (books, for example, do not count in the natural sciences). Moreover, the way sociology deals with gender issues might be different from other disciplines as well (but see similar gender effects in the natural sciences: Williams and Ceci, 2015). Future research has to show to what extent our results are generalizable.

Additionally, although it is widely accepted to use publications to measure academic performance, we could not measure performance in terms of citations, teaching quality, student satisfaction, lead vs. non-lead authorship, or the acquisition of grant money. While the acquisition of grant money seems to have no effect, as prior research seem to suggest (Plümper and Schimmelfennig, 2007: 111; Youtie et al., 2013), more research is needed to consider the role of these other factors.

We also could not take into account soft skills such as motivation or persuasiveness, which might be relevant for academic success as well. It is possible that these unobservable factors partly explain the gender gap. However, this would imply that women perform systematically better in these unobserved characteristics—which is possible, but there is no compelling a priori reason why it should be the case (cf. Fitzenberger and Schulze, 2014; Gino et al., 2015; Ochsenfeld, 2014).

In order to fully tackle possible leaky-pipeline effects, follow-up studies could analyze in greater detail either those who leave academia or those who enter it. Making use of (natural) experiments seems to be a promising direction (Bosquet et al., 2014; Breda and Ly, 2012; Godechot, 2014; Williams and Ceci, 2015; Zimmerman, 2003). Future research might also take a closer look at the role of research specialization, and whether or not this affects the chances of male and female postdocs differently. More generally, future studies might examine in greater detail the possible cumulative or multiplicative effects between gender and social or symbolic capital on career success (Lutter, 2015). Another aspect that we left out is the role of childrearing. If women overall have higher odds of becoming a professor in German sociology, then what is the role of motherhood and fatherhood? Are there significant differences between men and women without children, or between mothers and fathers, and if so, how significant are they?

Acknowledgments

We thank Lena Ehret, Aura Riedel, Volkan Sayman and Jana Vasileva for research assistance. For suggestions and comments on a previous version, we thank Jens Beckert, Andreas Diekmann, Barbara Fulda, Olivier Godechot, Christiane Gross, Annette Henninger, Monika Jungbauer-Gans, Philipp Korom, Sebastian Kohl, Clemens Kroneberg, Thomas Plümper, Uwe Schimank, Frank Schimmelfennig, Nina Schumacher, and Tobias Wolbring.

Appendix A.

Tables A1 and A2.

Table A1
Replication of main results without logged values.

	(1)	(2)	(3)	(4)	(5)	(6)
	Gender added	Symbolic capital added	Trans-national capital added	Social capital added	Men only	Women only
SSCI journal articles	1.112*** (7.232)	1.102*** (6.448)	1.101*** (5.218)	1.100*** (5.017)	1.106*** (4.838)	1.165* (2.389)
Non-SSCI articles	0.987 (−1.083)	0.988 (−0.962)	0.989 (−0.901)	0.987 (−1.101)	0.984 (−1.244)	1.001 (0.047)
Books	1.122** (2.747)	1.132** (2.858)	1.139** (3.041)	1.144** (3.116)	1.097* (1.987)	1.465** (3.134)
Edited volumes	1.050 (1.421)	1.052 (1.449)	1.046 (1.272)	1.039 (1.081)	1.019 (0.480)	1.189* (1.885)
Book chapters	1.021** (3.202)	1.020** (3.128)	1.021** (3.250)	1.025** (3.234)	1.029** (3.726)	0.996 (−0.164)
Gray literature	0.984* (−1.938)	0.985* (−1.822)	0.986* (−1.687)	0.987 (−1.570)	0.987 (−1.508)	0.989 (−0.372)
Female	1.336* (2.017)	1.362* (2.164)	1.355* (2.140)	1.375* (2.289)		

Table A1 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)
	Gender added	Symbolic capital added	Trans-national capital added	Social capital added	Men only	Women only
Prestige graduation		1.004 (0.130)	1.006 (0.199)	0.999 (−0.037)	0.991 (−0.204)	1.048 (0.790)
Prestige doctorate		0.978 (−0.679)	0.981 (−0.583)	0.976 (−0.702)	0.927 (−1.636)	0.974 (−0.435)
Prestige habilitation		1.040 (1.095)	1.039 (1.043)	1.039 (1.036)	1.029 (0.635)	1.113 ⁺ (1.933)
Awards		1.230 ^{**} (2.938)	1.221 ^{**} (2.831)	1.194 ⁺ (2.449)	1.074 (0.748)	1.667 ^{***} (4.283)
Months abroad			1.001 (0.708)	1.000 (0.064)	1.000 (0.209)	0.998 (−0.819)
Studied abroad			1.226 (1.149)	1.188 (0.982)	1.335 (1.294)	1.117 (0.368)
Doctorate abroad			1.313 (1.147)	1.257 (0.960)	0.991 (−0.034)	1.678 (0.893)
International publications			0.996 (−0.558)	1.001 (0.140)	1.002 (0.258)	1.029 (1.409)
Mobility				1.067 (2.103)	1.059 (1.417)	1.064 (1.292)
Interim professor				0.901 (−1.639)	0.890 (−1.538)	1.012 (0.091)
Department size				1.011 (0.768)	1.011 (0.679)	1.065 ⁺ (2.559)
Co-authors				0.997 (−1.017)	0.996 (−1.272)	0.995 (−0.522)
Incomplete	1.837 ^{***} (3.620)	1.935 ^{***} (3.841)	1.942 ^{***} (3.895)	1.928 ^{***} (3.871)	1.836 ^{***} (3.183)	3.375 ^{***} (3.808)
Open positions	1.007 (0.811)	1.007 (0.857)	1.007 (0.768)	1.006 (0.694)	1.011 (1.075)	0.990 (−0.516)
Habilitation	1.624 ^{**} (5.605)	1.625 ^{**} (5.532)	1.631 ^{**} (5.421)	1.637 ^{**} (5.321)	1.469 ^{**} (4.486)	2.540 ^{***} (3.567)
Habilitation (squared)	0.961 ^{***} (−3.633)	0.961 ^{***} (−3.617)	0.961 ^{***} (−3.558)	0.960 ^{***} (−3.513)	0.973 ^{**} (−2.886)	0.907 ^{**} (−2.682)
Assistant professor	1.307 ^{***} (5.791)	1.320 ^{***} (5.927)	1.323 ^{***} (5.937)	1.307 ^{***} (5.606)	1.325 ^{**} (3.106)	1.347 ^{***} (4.085)
Pseudo R ²	0.083	0.087	0.088	0.090	0.084	0.191
Log-likelihood	−1495.249	−1489.602	−1488.066	−1484.572	−933.638	−347.729
Degrees of freedom	12	16	20	24	23	23
Chi ²	330.687	327.121	346.859	344.188	229.004	177.012
AIC	3014.497	3011.205	3016.132	3017.143	1913.276	741.459
BIC	3113.608	3143.353	3181.317	3215.365	2094.879	904.091
Number of Events (tenure)	297	297	297	297	203	94
N (persons)	1260	1260	1260	1260	734	526
N (persons-publications)	28,545	28,545	28,545	28,545	19,846	8699

Notes:

Exponentiated coefficients (hazard ratios); *t* statistics in parentheses.⁺ *p* < 0.1.^{*} *p* < 0.05.^{**} *p* < 0.01.^{***} *p* < 0.001.

Table A2

Testing changes and robustness over time.

	(1)	(2)	(3)	(4)	(5)	(6)
SSCI journal articles (ln)	1.680 ^{***} (5.631)	1.394 ⁺ (2.575)	1.676 ^{***} (5.622)	1.686 ^{***} (5.681)	1.696 ^{***} (5.680)	1.441 ^{**} (2.679)
Non-SSCI articles (ln)	0.998 (−0.023)	0.991 (−0.089)	0.998 (−0.025)	0.998 (−0.023)	0.993 (−0.074)	0.988 (−0.119)
Books (ln)	1.623 ^{**} (3.143)	1.633 ^{**} (3.150)	1.715 ⁺ (2.260)	1.606 ^{**} (3.077)	1.630 ^{**} (3.150)	1.897 ⁺ (2.462)
Edited volumes (ln)	1.336 ^{**} (2.653)	1.347 ^{**} (2.704)	1.333 ^{**} (2.628)	1.317 ⁺ (2.507)	1.337 ^{**} (2.645)	1.321 ⁺ (2.506)
Book chapters (ln)	1.167 (1.316)	1.193 (1.486)	1.166 (1.307)	1.173 (1.358)	1.178 (1.381)	1.199 (1.525)

Table A2 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)
Gray literature (ln)	0.853 [*] (−2.234)	0.846 [*] (−2.314)	0.854 [*] (−2.230)	0.845 [*] (−2.370)	0.847 [*] (−2.331)	0.837 [*] (−2.468)
Female	1.422 [*] (2.478)	1.427 [*] (2.487)	1.420 [*] (2.467)	1.422 [*] (2.468)	1.893 [*] (2.286)	1.811 [*] (2.058)
Prestige graduation (ln)	0.729 (−0.986)	0.740 (−0.932)	0.728 (−0.990)	0.712 (−1.070)	0.704 (−1.091)	0.703 (−1.099)
Prestige doctorate (ln)	0.669 (−1.287)	0.664 (−1.296)	0.672 (−1.261)	0.664 (−1.307)	0.672 (−1.265)	0.670 (−1.246)
Prestige habilitation (ln)	1.258 (0.682)	1.285 (0.728)	1.252 (0.663)	1.234 (0.617)	1.262 (0.680)	1.249 (0.631)
Awards (ln)	1.517 ^{**} (2.608)	1.508 [*] (2.546)	1.519 ^{**} (2.622)	1.007 (0.017)	1.512 ^{**} (2.595)	1.093 (0.226)
Months abroad (ln)	1.015 (0.374)	1.015 (0.376)	1.015 (0.357)	1.019 (0.463)	1.015 (0.379)	1.017 (0.411)
Studied abroad	1.163 (0.878)	1.155 (0.841)	1.155 (0.834)	1.137 (0.741)	1.175 (0.941)	1.127 (0.685)
Doctorate abroad	1.123 (0.513)	1.112 (0.459)	1.127 (0.527)	1.060 (0.245)	1.103 (0.435)	1.064 (0.259)
International publications (ln)	1.087 (1.047)	1.077 (0.921)	1.089 (1.063)	1.090 (1.068)	1.084 (0.998)	1.080 (0.946)
Mobility (ln)	1.380 [*] (2.539)	1.363 [*] (2.421)	1.384 [*] (2.541)	1.382 [*] (2.558)	1.364 [*] (2.446)	1.364 [*] (2.422)
Interim professor (ln)	0.938 (−0.437)	0.966 (−0.235)	0.938 (−0.435)	0.947 (−0.369)	0.942 (−0.409)	0.971 (−0.197)
Department size (ln)	1.226 ⁺ (1.842)	1.229 ⁺ (1.855)	1.226 ⁺ (1.846)	1.227 ⁺ (1.850)	1.231 ⁺ (1.864)	1.234 ⁺ (1.885)
Co-authors (ln)	0.996 (−0.046)	1.000 (−0.000)	0.997 (−0.040)	0.995 (−0.061)	0.997 (−0.033)	1.000 (0.002)
Incomplete	1.965 ^{***} (3.774)	1.946 ^{***} (3.691)	1.962 ^{***} (3.763)	1.946 ^{***} (3.694)	1.976 ^{***} (3.764)	1.939 ^{***} (3.623)
Open positions (ln)	1.193 (1.122)	1.195 (1.129)	1.192 (1.119)	1.202 (1.179)	1.190 (1.108)	1.197 (1.147)
Habilitation	1.558 ^{***} (5.446)	1.553 ^{***} (5.481)	1.557 ^{***} (5.439)	1.556 ^{***} (5.476)	1.554 ^{***} (5.408)	1.547 ^{***} (5.441)
Habilitation (squared)	0.964 ^{***} (−3.708)	0.965 ^{***} (−3.730)	0.964 ^{***} (−3.693)	0.964 ^{***} (−3.734)	0.965 ^{***} (−3.682)	0.965 ^{***} (−3.695)
Assistant professor (ln)	2.293 ^{***} (5.589)	2.285 ^{***} (5.454)	2.288 ^{***} (5.567)	2.313 ^{***} (5.718)	2.320 ^{***} (5.648)	2.320 ^{***} (5.585)
Post2002	0.845 (−0.855)	0.617 (−1.973)	0.924 (−0.211)	0.770 (−1.298)	0.928 (−0.354)	0.839 (−0.415)
Post2002*SSCI articles (ln)		1.304 [*] (1.841)				1.252 (1.450)
Post2002*Books (ln)			0.927 (−0.279)			0.810 (−0.722)
Post2002*Awards (ln)				1.686 (1.230)		1.507 (0.977)
Post2002*Female					0.693 (−1.214)	0.731 (−0.984)
Pseudo R ²	0.103	0.104	0.103	0.103	0.103	0.104
Log-likelihood	−1463.096	−1461.672	−1463.058	−1461.988	−1462.423	−1460.353
Degrees of freedom	25	26	26	26	26	29
Chi ²	347.519	343.726	351.372	352.662	341.824	349.808
AIC	2976.192	2975.344	2978.117	2975.977	2976.846	2978.706
BIC	3182.673	3190.084	3192.857	3190.717	3191.586	3218.224
Number of Events (tenure)	297	297	297	297	297	297
N (persons)	1260	1260	1260	1260	1260	1260
N (persons-publications)	28,545	28,545	28,545	28,545	28,545	28,545

Notes:

Exponentiated coefficients (hazard ratios); *t* statistics in parentheses; ln = logged values.* *p* < 0.1.+ *p* < 0.05.** *p* < 0.01.*** *p* < 0.001.

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.respol.2016.01.019>.

References

Allison, Paul D., Long F Scott., 1990. Departmental effects on scientific productivity. *Am. Sociol. Rev.* 55 (4), 469–478.

Allison, Paul D., Long, Scott J., Krauze, Tad K., 1982. Cumulative advantage and inequality in science. *Am. Sociol. Rev.* 47 (5), 615–625.

Althaber, Agnieszka, Hess, Johanna, Pfahl, Lisa, 2011. Karriere mit Kind in der Wissenschaft – Egalitärer Anspruch und tradierte Wirklichkeit der familiären Betreuungsarrangements von erfolgreichen Frauen und ihren Partnern. In: Rusconi, A., Solga, H. (Eds.), *Gemeinsam Karriere machen. Die Verflechtung von Berufskarrieren und Familie in Akademikerpartnerschaften*. Barbara Budrich, Opladen, pp. 83–116.

Arrow, Kenneth J., 1972. Models of job discrimination. In: Pascal, A.H. (Ed.), *Racial Discrimination in Economic Life*. Heath, Lexington, MA, pp. 83–102.

Baier, Christian, Münch, Richard, 2013. Institutioneller Wettbewerb und Karrierechancen von Nachwuchswissenschaftlern in der Chemie. *Kölner Zeitschrift Soziol. Sozialpsychol.* 65 (1), 129–155.

- Bäker, Agnes, 2015. Non-tenured post-doctoral researchers' job mobility and research output: an analysis of the role of research discipline, department size, and coauthors. *Res. Policy* 44 (3), 634–650.
- Baldi, Stéphane, 1995. Prestige determinants of first academic job for new sociology Ph.D.s 1985–1992. *Sociol. Q.* 36 (4), 777–789.
- Becker, Gary S., 1960. Underinvestment in college education? *Am. Econ. Rev.* 50 (2), 346–354.
- Becker, Gary S., 1964. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. University of Chicago Press, Chicago.
- Becker, Gary S., 1971. *The Economics of Discrimination*. The University of Chicago Press, Chicago (1957).
- Becker, Gary S., 1993. Nobel lecture: the economic way of looking at behavior. *J. Polit. Econ.* 101 (3), 385–409.
- Bedeian, Arthur G., Cavazos, David E., Hunt, James G., Jauch, Lawrence R., 2010. Doctoral degree prestige and the academic marketplace: a study of career mobility within the management discipline. *Acad. Manag. Learn. Educ.* 9 (1), 11–25.
- Bosquet, Clément, Combes, Pierre-Philippe, Garcia-Peñalosa, Cecilia, 2014. *Gender and Promotions: Evidence from Academic Economists in France*. Sciences Po, Paris (LIEPP Working Paper, No. 29).
- Bourdieu, Pierre, 1986. "The Forms of Capital." pp. 241–258 in *Handbook of Theory and Research for the Sociology of Education*, edited by J. G. Richardson.
- Breda, Thomas, Ly, Son Thierry, 2012. Do professors really perpetuate the gender gap in science? In: Evidence from a Natural Experiment in a French Higher Education Institution. Centre for the Economics of Education, London School of Economics, London (Discussion Paper) <http://cee.lse.ac.uk/ceedps/ceedp138.pdf>.
- Burris, Val, 2004. The academic caste system: prestige hierarchies in PhD exchange networks. *Am. Sociol. Rev.* 69 (2), 239–264.
- Burt, Ronald S., 1998. The gender of social capital. *Ration. Soc.* 10 (1), 5–46.
- Claves, Mario A., Gould, William W., Gutierrez, Roberto G., 2004. *An Introduction To Survival Analysis Using Stata*. Stata Press, College Station, TX.
- Coleman, James S., 1988. Social capital in the creation of human capital. *Am. J. Sociol.* 94 (1), 95–121.
- Cox, David R., 1972. Analysis of multivariate binary data. *J. R. Stat. Soc., Ser. C (Appl. Stat.)* 21 (2), 113–120.
- Crane, Diana, 1970. The academic marketplace revisited: a study of faculty mobility using the Carter ratings. *Am. J. Sociol.* 75 (6), 953–964.
- Cruz-Castro, Laura, Sanz-Menéndez, Luis, 2010. Mobility versus job stability: assessing tenure and productivity outcomes. *Res. Policy* 39 (1), 27–38.
- Davis, Kingsley, Moore, Wilbert E., 1944. Some principles of stratification. *Am. Sociol. Rev.* 10 (2), 242–249.
- Ding, W.W., Murray, F., Stuart, T.E., 2006. Gender differences in patenting in the academic life sciences. *Science* 313 (5787), 665–667.
- Durkheim, Émile, 1893. "De la division du travail social." *Les auteur(e)s classiques*.
- Elsevier, 2015. *Mapping Gender in the German Research Arena. A report conducted by Elsevier*. (https://www.elsevier.com/_data/assets/pdf_file/0004/126715/ELS_Germany_Gender_Research-SinglePages.pdf).
- Feldman, Kenneth A., 1993. College students' views of male and female college teachers: Part II—evidence from students' evaluations of their classroom teachers. *Res. Higher Educ.* 34 (2), 151–211.
- Fernandez, Roberto M., Weinberg, Nancy, 1997. Sifting and sorting: personal contacts and hiring in a retail bank. *Am. Sociol. Rev.* 62 (6), 883–902.
- Fitzenberger, Bernd, Schulze, Ute, 2014. Up or out: research incentives and career prospects of postdocs in Germany. *German Econ. Rev.* 15 (2), 287–328.
- Fotaki, Marianna, 2013. No woman is like a man (in Academia): The masculine symbolic order and the unwanted female body. *Organ. Stud.* 34 (9), 1251–1275.
- Gerhards, Jürgen, 2002. Reputation in der deutschen Soziologie - zwei getrennte Welten. *Soziologie* 31 (2), 19–33.
- Gerhards, Jürgen, Hans, Silke, 2013. Transnational human capital, education, and social inequality. Analyses of international student exchange. *Zeitschrift Soziol.* 42 (2), 99–117.
- Gino, Francesca, Wilmoth, Caroline Ashley, Brooks, Alison Wood, 2015. Compared to men, women view professional advancement as equally attainable, but less desirable. *Proc. Natl. Acad. Sci.* 112 (40), 12354–12359.
- Godechot, Olivier, 2014. The Chance of Influence. A Natural Experiment on the Role of Social Capital in Academic Hiring. MaxPo, Paris (Discussion Paper 14/1).
- Godechot, Olivier, Mariot, Nicolas, 2004. Les deux formes du capital social: structure relationnelle des jurys de thèses et recrutement en science politique. *Revue Fr. Sociol.* 45 (2), 243–282.
- Gould, Roger V., 2002. The origins of status hierarchies: a formal theory and empirical test. *Am. J. Sociol.* 107 (5), 1143–1178.
- Granovetter, Mark, 1973. The strength of weak ties. *Am. J. Sociol.* 78 (6), 1360–1380.
- Gross, Christiane, Jungbauer-Gans, Monika, 2007. Erfolg durch Leistung? Ein Forschungsüberblick zum Thema Wissenschaftskarrieren. *Soziale Welt* 81 (4), 453–471.
- Hartmann, Michael, 2010. Die Exzellenzinitiative und ihre Folgen. *Leviathan* 38 (3), 369–387.
- Heining, Jörg, Jerger, Jürgen, Lingens, Jörg, 2007. Success in the academic labour market for economists—The German experience. *Econ. Manag. Inform. Syst. (Working Paper No. 442)*. University of Regensburg: Working Papers in Business <http://epub.uni-regensburg.de/4539/>.
- Hix, Simon, 2004. A global ranking of political science departments. *Polit. Stud. Rev.* 2 (3), 293–313.
- Jungbauer-Gans, Monika, Gross, Christiane, 2013. Determinants of success in university careers: findings from the German Academic Labor Market. *Zeitschrift Soziol.* 42 (1), 74–92.
- Keith, Bruce, Babchuk, Nicholas, 1998. The quest for institutional recognition: a longitudinal analysis of scholarly productivity and academic prestige among sociology departments. *Soc. Forces* 76 (4), 1495–1533.
- Knobloch-Westerwick, Silvia, Glynn, Carroll J., Hüge, Michael, 2013. The Matilda effect in science communication: an experiment on gender bias in publication quality perceptions and collaboration interest. *Sci. Commun.* 35 (5), 603–625.
- Krais, Beate, 2002. Academia as a profession and the hierarchy of the sexes: paths out of research in German universities. *Higher Educ. Q.* 56 (4), 407–418.
- Leahey, Erin, 2006. Gender differences in productivity: research specialization as a missing link. *Gend. Soc.* 20 (6), 754–780.
- Leahey, Erin, 2007. Not by productivity alone: how visibility and specialization contribute to academic earnings. *Am. Sociol. Rev.* 72 (4), 533–561.
- Leahey, Erin, Crockett, Jason Lee, Hunter, Laura Ann, 2008. Gendered academic careers: specializing for success? *Soc. Forces* 86 (3), 1273–1309.
- Leemann, Regula Julia, Dubach, Philipp, Boes, Stefan, 2010. The leaky pipeline in the Swiss University system: identifying gender barriers in postgraduate education and networks using longitudinal data. *Swiss J. Sociol.* 36 (2), 299–323.
- Li, Eldon Y., Liao, Chien Hsiang, Yen, Hsiuju Rebecca, 2013. Co-authorship networks and research impact: a social capital perspective. *Res. Policy* 42 (9), 1515–1530.
- Lin, D.Y., Wei, L.J., 1989. The robust inference for the cox proportional hazards model. *J. Am. Stat. Assoc.* 84 (408), 1074–1078.
- Lin, Nan, 2001. *Social Capital: A Theory of Social Structure and Action*. Cambridge University Press, New York.
- Lincoln, Anne E., Pincus, Stephanie, Koster, Janet Bandows, Leboy, Phoebe S., 2012. The Matilda Effect in science: Awards and Prizes in the US, 1990s and 2000s. *Soc. Stud. Sci.* 42 (2), 307–320.
- Long, J. Scott, 1978. Productivity and academic position in the scientific career. *Am. Sociol. Rev.* 43 (6), 889–908.
- Long, J. Scott, 1990. The origins of sex differences in science. *Soc. Forces* 68 (4), 1297–1316.
- Long, J. Scott, Allison, Paul D., McGinnis, Robert, 1993. Rank advancement in academic careers: sex differences and the effects of productivity. *Am. Sociol. Rev.* 58 (5), 703–722.
- Lutter, Mark, 2015. Do women suffer from network closure? The moderating effect of social capital on gender inequality in a project-based labor market, 1929–2010. *Am. Sociol. Rev.* 80 (2), 329–358.
- Marsh, Herbert W., 2007. Students' evaluations of university teaching: a multidimensional perspective. In: Perry, R.P., Smart, J.C. (Eds.), *The Scholarship of Teaching and Learning in Higher Education: An Evidence-Based Perspective*. Springer, New York, pp. 319–384.
- Matthies, Hildegard, Zimmermann, Karin, 2010. Gleichstellung in der Wissenschaft. In: Simon, D., Knie, A., Hornbostel, S. (Eds.), *Handbuch Wissenschaftspolitik*. VS Verlag, Wiesbaden, pp. 193–209.
- Merton, Robert K., 1973. The normative structure of science. In: Storer, N.W. (Ed.), *The Sociology of Science*. University of Chicago Press, Chicago, pp. 267–278.
- Möller, Christina, 2013. Wie offen ist die Universitätsprofessur für soziale Aufsteigerinnen und Aufsteiger? Explorative Analysen zur sozialen Herkunft der Professorinnen und Professoren an den nordrhein-westfälischen Universitäten. *Soziale Welt* 64 (4), 341–360.
- Moss-Racusin, Corinne A., Dovidio, John F., Brescoll, Victoria L., Graham, Mark J., Handelsman, Jo, 2012. Science faculty's subtle gender biases favor male students. *Proc. Natl. Acad. Sci.* 109 (41), 16474–16479.
- Münch, Richard, 2006. Wissenschaft im Schatten von Kartell, Monopol und Oligarchie. Die latenten Effekte der Exzellenzinitiative. *Leviathan* 34 (4), 466–486.
- Münch, Richard, 2014. *Academic Capitalism. Universities in the Global Struggle for Excellence*. Routledge.
- Münch, Richard, Baier, Christian, 2009. Die Konstruktion der soziologischen Realität durch Forschungsrating. *Berl. J. Soziol.* 19 (2), 295–319.
- Musselin, Christine, 2010. *The Market for Academics*. Routledge, New York.
- Ochsenfeld, Fabian, 2014. Why do women's fields of study pay less? A test of devaluation, human capital, and gender role theory. *Eur. Sociol. Rev.* 30 (4), 536–548.
- Petersen, Trond, Saporta, Ishak, 2004. The opportunity structure for discrimination. *Am. J. Sociol.* 109 (4), 852–901.
- Phelps, Edmund S., 1972a. *Inflation Policy and Unemployment Theory, the Cost-Benefit Approach to Monetary Planning*. Norton, New York.
- Phelps, Edmund S., 1972b. The statistical theory of racism and sexism. *Am. Econ. Rev.* 62 (4), 659–661.
- Plümper, Thomas, Schimmelfennig, Frank, 2007. Wer wird Prof – und wann? Berufungsdeterminanten in der deutschen Politikwissenschaft. *Politische Vierteljahresschr.* 48 (1), 97–117.
- Rawlings, Craig M., McFarland, Daniel A., 2011. Influence flows in the academy: using affiliation networks to assess peer effects among researchers. *Soc. Sci. Res.* 40 (3), 1001–1017.
- Rosenfeld, Rachel A., 1981. Academic men and women's career mobility. *Soc. Sci. Res.* 10 (4), 337–363.
- Rothgeb Jr., John M., 2014. When tenure protects the incompetent: results from a survey of department chairs. *PS: Political Sci. Politics* 47 (01), 182–187.
- Sanz-Menéndez, Luis, Cruz-Castro, Laura, Alva, Kenedy, 2013. Time to tenure in Spanish Universities: an event history analysis. *PLoS One* 8 (10), e77028.

- Schubert, Frank, Engelage, Sonja, 2011. *Wie undicht ist die Pipeline? Wissenschaftskarrieren von promovierten Frauen*. *Kölner Zeitschrift für Sozialpsychol.* 63 (3), 431–457.
- Steinpreis, RheaE, Anders, KatieA, Ritzke, Dawn, 1999. *The impact of gender on the review of the curricula vitae of job applicants and tenure candidates: a national empirical study*. *Sex Roles* 41 (7–8), 509–528.
- Tartari, Valentina, Salter, Ammon, 2015. *The engagement gap: exploring gender differences in university–industry collaboration activities*. *Res. Policy* 44 (6), 1176–1191.
- Williams, Wendy M., Ceci, Stephen J., 2015. *National hiring experiments reveal 2:1 faculty preference for women on stem tenure track*. *Proc. Natl. Acad. Sci.* 112 (17), 5360–5365.
- Wissenschaftsrat, 2008. *Pilotstudie Forschungsrating Soziologie, Abschlussbericht der Bewertungsgruppe*. Wissenschaftsrat, Köln <http://www.wissenschaftsrat.de/download/Forschungsrating/Dokumente/Grundlegende%20Dokumente%20zum%20Forschungsrating/8422-08.pdf>.
- Wolbring, Tobias, 2013. *Fallstricke der Lehrevaluation, Möglichkeiten und Grenzen der Messbarkeit von Lehrqualität*. Campus, Frankfurt a.M.
- Wolfinger, Nicholas H., Mason, Mary Ann, Goulden, Marc, 2009. *Stay in the game: gender, family formation and alternative trajectories in the academic life course*. *Soc. Forces* 87 (3), 1591–1621.
- Wuchty, Stefan, Jones, Benjamin F., Uzzi, Brian, 2007. *The increasing dominance of teams in production of knowledge*. *Science* 316 (5827), 1036–1039.
- Xie, Yu, Shauman, Kimberlee A., 1998. *Sex differences in research productivity: new evidence about an old puzzle*. *Am. Sociol. Rev.* 63 (6), 847–870.
- Youtie, Jan, Rogers, Juan, Heinze, Thomas, Shapira, Philip, Tang, Li, 2013. *Career-based influences on scientific recognition in the United States and Europe: longitudinal evidence from curriculum vitae data*. *Res. Policy* 42 (8), 1341–1355.
- Zimmerman, David J., 2003. *Peer effects in academic outcomes: evidence from a natural experiment*. *Rev. Econ. Stat.* 85 (1), 9–23.