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**The opportunity costs of becoming a dean:
Does leadership in academia crowd out research?**

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The opportunity costs of becoming a dean: Does leadership in academia crowd out research?

Abstract: Researchers in academia typically perform different tasks: research, teaching and services to the scientific community. We analyze the opportunity costs in terms of a potentially reduced publication productivity associated with becoming a dean in the German institutional setting where deans are non-professional expert-leaders who temporarily take the dean position. Theoretically, we distinguish between two different effects that relate deanship and publication productivity: a *resource effect* where publication productivity during and – as a result of potentially having developed a taste for service –also post deanship decrease as a result of a reduction of the available time for research and a *self-selection effect* where pre-deanship publication productivity is lower than that of peers who are not about to become dean. Based on a dataset of 1,110 business and economics researchers from German-speaking universities, we find evidence for a resource effect with leadership in academia reducing research productivity during and also post deanship. We find no evidence of a negative self-selection effect in the sense of less successful researchers being more likely to take the position of a dean. Reduced research productivity during and post deanship as compared to those researchers that never became dean is driven by those researchers who become dean in later periods of their career, i.e., presumably by those who deliberately shift their focus away from research and towards a stronger engagement in the scientific community in their late career years. Early career deans, on the contrary, seem to see their deanship more as a transitory role and are able to compensate the reduced resources during deanship, and they also do not suffer from a reduced publication productivity post deanship.

Keywords: Leadership, opportunity costs, academia, resource effect, self-selection, expert leader

JEL-Codes: D23, D73, H83, I23, M12, M21, M5

1 Introduction

Researchers in academia typically perform three different tasks: research, teaching and services to the scientific community (see, e.g. Evans and Meyer 2003). While there may be synergies between teaching and research (see, e.g. Backes-Gellner and Zanders 1989) and also between research and more research-related services to the scientific community (such as, for example, journal editing, see Aguinis et al. 2010), “one is hard pressed to find any way in which service to the department or institution could be anything other than a drain on research efforts” (Taylor, Fender and Burke 2006: 850).

In our paper, we analyze the opportunity costs in terms of publication productivity associated with becoming a dean in German-speaking academia, an institutional setting where deans are non-professional expert-leaders, that is, researchers from the department who temporarily take the position of a dean for a time span of two to four years and then step back into the ranks (see, e.g. Krücken, Blümel and Kloke 2013). Often, and especially at an earlier career age, researchers are rotated into the dean’s office and do not deliberately decide to become a dean, while, predominantly at later career stages, researchers might also deliberately decide to run for the dean’s office as a result of a general shift in focus towards serving the scientific community.

While it has been argued (see Goodall 2009, Goodall and Bäker 2015; Goodall, McDowell and Singell 2017) that expert leaders are favorable for the organization they lead (in terms of department members’ job satisfaction and research productivity), there are hardly any studies that analyze the effects of being an expert leader on the leaders themselves. So far, only Taylor, Fender and Burke (2006) explore the relation between research productivity and service to the department on the basis of individual researchers. They do so in the context of the U.S. system, in which deans are mostly researchers who turned into professional managers and who volunteered for the position. Thus, results derived from such an institutional setting will be difficult to generalize to the German-speaking setting. Further, Taylor, Fender and Burke (2006) base their analysis on a survey in which they asked researchers for the average number of committee memberships and committee chairs “in a typical year” and whether they had been department head or program director during the last five years and relate that to research output within the same five years. On the contrary, our analysis is based on the German institutional setting, and is not limited to analyzing whether a researcher held an office within the last five years using a cross section approach, but rather looks at the whole career and relies on a panel dataset. Further, we test for self-selection using random effects panel regressions.

Studying pre-dean publication productivity allows us to explore whether differences in the publication productivity of deans and non-deans are the result of being or having been in the office or whether they can rather be traced to self-selection. As a robustness check, we also account for self-selection by applying panel regression analyses with person-fixed effects.

Theoretically, we build on personnel economics and distinguish between two different effects that might explain a negative correlation between being a dean and publication productivity. *Firstly*, there is a resource effect involved since the time devoted to the dean's office will reduce the time available for research. As a result, we would expect deans to have a lower publication productivity during and potentially also post deanship, though after deanship the effect should be weaker. Further, having served as a dean, researchers might develop a taste for service to the community and decide to turn to other service tasks afterwards, reducing the available time resources for research and publication productivity post deanship. *Secondly*, for those that are not rotated into the office but deliberately decide to become a dean (even though it is not their turn), there might also be a negative *self-selection effect* where those that show a low publication productivity have a higher probability to run for the dean's office in search of an alternative role that makes up for not being among the successful researchers. As a result, we would expect deans to have a lower *pre-dean* publication productivity.

Our empirical analysis is based on a dataset of 1,110 business and economics researchers from Austria, Germany, and the German-speaking part of Switzerland and covers the years 1965 to 2010. Empirically, we find that during deanship and in the post-dean period, deans in our dataset had a lower publication productivity than their peers – hinting at a resource effect where research is crowded out by academic leadership. Judging from their pre-dean publication productivity, deans in our sample period were not a negative self-selection. Rather, researchers that were about to become dean were undistinguishable from their peers when it comes to their pre-dean publication productivity. Hence, there was no self-selection in the sense of less successful researchers being more likely to take the position of a dean. We also find that the lower publication productivity during deanship and in the post-dean period were driven by those researchers that came into office in later career years, i.e., not by those researchers who were most likely to have been rotated into the office. This might indeed have been the result of researchers taking the position of a dean because of a general shift of focus – away from research and towards a stronger engagement in the scientific community. Researchers who became dean late in their careers might hence be more likely to devote more time and effort to their office and they might have also – parallel to becoming a dean – opted

for more engagement in the scientific community in general – at the expense of publication productivity during deanship and in the years to follow. Since we control for career age, the latter effect is not a general career age effect. Hence, it is not that the older researchers in general are more likely to focus less on publications. But if they come into office, they are more likely to do so at the expense of publication productivity.

Our study contributes to the literature in three major ways: Firstly, we are the first to empirically analyze the opportunity costs of becoming a dean in a setting where deans are non-professional expert-leaders who temporarily take the position of a dean and then typically step back into the ranks. Secondly, other than Taylor, Fender and Burke (2006), we also regard pre-dean publication productivity, thus shedding light on a potential process of self-selection into the office. Thirdly, we speculate on different theoretical explanations for the observed links between becoming a dean and publication productivity pre, during and post deanship.

The remainder of the paper is structured as follows: Section 2 unfolds our theoretical perspective and derives our hypotheses. In section 3, the data, variables and empirical strategy are presented. Section 4 provides the results and section 5 concludes.

2 Theory and Hypotheses

Theoretically, we expect to observe a negative link between deanship and publication productivity. This negative link can be traced back to two different effects: a resource effect, and a self-selection effect.

Resource Effect: Firstly, a researcher that becomes a dean will have less time available for research (see also Taylor, Fender and Burke 2010). Given that time is a limited resource, adding another task to the load reduces the time budget for research. Time is an essential input into research. Reducing this input will generally result in a reduction of output (Fox 1992; Hattie and Marsh 1996; Manchester and Barbezat 2013). As a result, if the resource effect dominates, we would expect deans to have a lower publication productivity *during* deanship. Likewise, also post-deanship, publication productivity might be reduced, because during deanship less projects will be started, and/or because after the term in the office researchers might take on new service functions, having developed a “taste for service” during their deanship. Thus, developing a taste for service during deanship might add to the, arguably not too strong, post-deanship resource effect. Our first two hypotheses thus read:

H1: During deanship, researchers have a lower publication productivity.

H2: Post-deanship, researchers have a lower publication productivity.

Self-Selection: Secondly, there also might be negative self-selection where those that show a low publication productivity are more likely to run for the dean's office in search of an alternative role that makes up for not being a successful researcher. If academics who place less emphasis on research (or are less skilled in doing so) volunteer for dean positions, then the publication productivity of deans would also be lower. Deanship would then, however, not *cause* a lower publication productivity, but a lower publication productivity would make it more likely that the respective academic seeks an alternative role as a dean. As a result, we would expect deans to have a lower *pre-dean* publication productivity. Our corresponding third hypothesis reads:

H3: Pre-deanship, researchers have a lower publication productivity.

3 Data, Variables and Empirical Strategy

3.1 Data

Our study is based on a unique and partly self-collected dataset of researchers in business and economics from Austria, Germany, and the German-speaking part of Switzerland. It contains information on researchers' journal article output as well as information on year of PhD, age, gender, and discipline (business administration vs. economics). The data were collected via the online research monitoring portal initialized by the German Economic Association ("*Portal Forschungsmonitoring*") and quality-approved by the *Thurgau Institute of Economics* and the *Konjunkturforschungsstelle* KOF at ETH Zurich. In the publication data of the research monitoring portal used for our study, all publications of all faculty members are collected on the basis of publication databases, and the names of faculty members are reported by the faculties who have every interest to report a full list of names because the list of faculty members determines the ranking result of the faculties. Thus, unlike in the *Handelsblatt* ranking on individual researchers, there is no opt-out option for the database as such, and hence, the research monitoring portal contains the full sample of business and economics researchers at universities in Germany, Austria and the German-speaking part of Switzerland. Journal publication output is measured in co-author- and quality-adjusted *Handelsblatt* points (see Krapf 2011 for the details).

To collect data on deanships we surveyed all researchers in the dataset in 2011. To substantiate the information on the deanship variable, we additionally hand-collected information

on deanship from the CVs of those professors that did not respond to the survey. We limited our additional data collection on professors since being a dean requires being a professor in the German-speaking system.

The survey was conducted in 2011, which is why we restrict our analysis to publication output up to and including 2010. Due to missing data points, we end up with 22'717 yearly publication observations on 1'110 researchers, 138 of which were dean at least once within the sample period. Deans in our sample were deans in over 60 different institutions.

3.2 Variables

The dependent variable in our analysis is a researcher's number of quality-weighted and coauthor-adjusted journal publications per year. Specifically, we use *Handelsblatt* points that take the number of co-authors and the attributed quality (or prestige) of a journal into consideration with journals being given a weight between 0.05 and 1 (0 if the journal is not listed in the *Handelsblatt* journal ranking). For economists, we used the economics *Handelsblatt* journal list of 2011, for business administration researchers, we used the business administration *Handelsblatt* journal list of 2009. The weight provided by the ranking is divided by the number of co-authors. For example, a business researcher who publishes an article in *Schmalenbach Business Review* together with a second author, receives 0.15 journal article points.

Given that publishing an article in a scientific journal takes time from the first submission until it is actually printed, we use a delayed publication variable to measure research output for any given year. Ellison (2002) shows that in economics, the time lag until an article is published is two to three years. Building on this information and following Bolli and Schläpfer (2015) we measure publication output by the average of publication points two years and three years later than the current year ($t+2$ and $t+3$) (*mean publication points*). The implicit assumption is that time and effort invested in research will translate into (journal) publications two to three years later. For example, for a researcher with 0.3 publication points in $t=2002$, and 0.7 publication points in $t=2003$, the dependent variable *mean publication points* for the year 2000 would be $(0.3+0.7)/2 = 0.5$.

Our main explanatory variables are dummy variables indicating whether in a specific year, a researcher was dean ($dean=1$) or not ($dean=0$), whether in a specific year, the researcher was in a phase three years preceding a deanship ($pre-dean=1$) or not ($pre-dean=0$), and whether in a specific year, the researcher was in a phase three years succeeding a deanship ($post-dean=1$) or not ($post-dean=0$). For example, for a researcher who was dean in the

year 2000 and 2001, the *dean* variable would take the value “1” for 2000 and 2001 and otherwise zero. The *pre-dean* variable would take the value “1” for 1997, 1998 and 1999, and the *post-dean* variable would take the value “1” for 2002, 2003 and 2004.

As previous literature has shown that publication productivity changes over the life cycle (Ayaita, Backes-Gellner and Pull 2017; Backes-Gellner and Schlinghoff 2010; Rauber and Ursprung 2008,), we control for researchers’ career age (*years since doctorate*). We further control for *year of birth*, *gender*, field (*business administration* vs. economics), and we include two variables that might indicate a researcher’s research ability: *age at doctorate* and *pre-doctorate publication points* (see e.g. Bäker 2015, Bäker et al. 2016). Given that productivity measured by *Handelsblatt* points might increase over time, we further included decade dummies.

3.3 Empirical Strategy

We apply OLS panel regressions with fixed effects to analyze whether and how publication productivity is affected by deanship. Further, we apply random effects to study a potential self-selection into deanship. Moreover, given that our dependent variable of yearly publication points averaged over a sliding window of two years has many zero observations – we also conducted Tobit regressions as part of our robustness checks (see e.g. Hollis 2001).

4 Results

4.1 Descriptive Statistics

Table 1, panel A displays the descriptive statistics for the 1,110 researchers in the sample, out of which 138 (12 percent) have been dean in at least one point in time. The average number of yearly publication points calculated as the average over a sliding window of two years (*mean publication points*) is 0.116. This equals one single-authored top tier journal publication every ten years. Roughly one percent of yearly observations per researcher fall into the three years prior to becoming a dean (*pre-dean*). Given that 88 percent of researchers in our sample have not (yet) been dean and thus their share of yearly observations that are *pre-dean* is zero, it is not surprising that on average only one percent of yearly observations per researcher are *pre-dean*. Similar mean values can be observed for the *dean* variable and the

post-dean variable.¹ The percentage declines slightly for *post-dean* years because some researchers were deans towards the end of the observation period, e.g., in 2009 or 2010, and their *post-dean* years are consequently not part of our sample.² Mean year of birth in our sample is 1962, and 90 percent of our sample researchers are male. Roughly 53 percent of our sample researchers work in the field of business administration. Average age when obtaining the doctorate is 30 years and the sum of pre-doctorate publication points is 0.03. Table 1, panel B shows the descriptive statistics on a person-year basis.

Table 1, panel C provides information for the deans in our sample (at individual researcher level). For the deans in our sample, we observe on average 3.058 years pre-dean (the number is slightly above the pre-defined 3 year spell because some researchers in our sample have been dean more than once), 2.478 years during deanship (i.e., on average, the deans in our sample serve in the office for about 2.5 years) and 1.775 years post-dean (the number is below the pre-defined 3 year spell because of those deans that were dean towards the end of our observation period such that not the full three years post-dean are observable).

Table 2 shows the correlations between variables on the level of the individual researcher, Table 3 displays the correlations between variables on a person-year level.

¹ The mean value for the dean variable is 0.011, which equals the average number of years in the dean's office for researchers who were dean (2.478, panel C of Table 1) divided by the average number of yearly observations for deans (29.130, panel C), times the share of deans in the sample (138/1,110). Thus, the mean value 0.011 represents the time spells (observation years) of deans among all time spells (observation years). The share of researchers in our data who had been a dean during the observation period is about 12.5%.

² When running a balanced panel estimation in which only researchers are included for which all three post-deanship years are available, we find similar results.

Table 1: Descriptive Statistics

	Observations	Mean	Std. Dev.	Min	Max
Panel A: Individual Researcher Level					
Mean publication points	1'110	0.116	0.118	0	0.860
Pre-dean (1=yes)	1'110	0.014	0.039	0	0.2
Dean (1=yes)	1'110	0.011	0.036	0	0.346
Post-dean (1=yes)	1'110	0.007	0.025	0	0.177
Year of birth	1'110	1962	9.219	1930	1983
Gender (1=male, 0=female)	1'110	0.900	0.300	0	1
Business administration (1=yes, 0=economics)	1'110	0.531	0.499	0	1
Age at doctorate	1'110	30.022	2.390	22	40
Pre-doctorate publication points	1'110	0.028	0.077	0	1
Number of years in data	1'110	20.466	9.523	3	43
Panel B: Person-Year Observation Level					
Mean publication points	22'717	0.107	0.185	0	2.263
Pre-dean (1=yes)	22'717	0.019	0.135	0	1
Dean (1=yes)	22'717	0.015	0.122	0	1
Post-dean (1=yes)	22'717	0.011	0.103	0	1
Years since doctorate	22'717	7.007	9.229	-5	46
Panel C: Deans (Individual Researcher Level)					
Mean publication points	138	0.102	0.112	0	0.629
Years pre-dean	138	3.058	0.712	1	6
Years as dean	138	2.478	1.768	0	9
Years post-dean	138	1.775	1.580	0	6
Year of birth	138	1954	7.962	1941	1971
Gender (1=male, 0=female)	138	0.949	0.220	0	1
Business administration (1=yes, 0=economics)	138	0.558	0.498	0	1
Age at doctorate	138	29.348	2.214	24	35
Pre-doctorate publication points	138	0.032	0.118	0	1
Number of years in data	138	29.130	8.423	13	43

Notes: The pre- and post-dean dummy variables (Panel A and B) indicate the three years prior taking on a dean position, and after leaving the office, respectively. Years pre-dean, years as dean and years post-dean (Panel C) indicate the average number of years that we observe the deans in our sample in a pre-dean phase, during deanship, and in a post-dean phase, respectively.

Table 2: Correlation Analysis on Individual Researcher Level (N= 1'110)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Mean publication points	1.000							
(2) Pre-dean (1=yes)	-0.033	1.000						
(3) Dean (1=yes)	-0.040	0.767	1.000					

(4) Post-dean (1=yes)	-0.052	0.672	0.729	1.000				
	*	***	***					
(5) Year of birth	0.190	-0.261	-0.259	-0.316	1.000			
	***	***	***	***				
(6) Gender (1=male, 0=female)	0.076	0.046	0.062	0.073	-0.177	1.000		
	**		**	**	***			
(7) Business administration (1=yes)	-0.107	0.047	0.034	0.021	0.034	-0.043	1.000	

(8) Age at doctorate	-0.120	-0.082	-0.059	-0.091	0.052	0.013	0.013	1.000
	***	***	*	***	*			
(9) Pre-doctorate publication points	0.201	0.024	0.058	0.020	0.071	0.034	0.019	0.077
	***		*		**			**

Notes: *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Correlation analysis on Person-Year Observation Level (N= 22'717)

	(1)	(2)	(3)	(4)	(5)
(1) Mean publication points	1.000				
(2) Pre-dean (1=yes)	0.006	1.000			
(3) Dean (1=yes)	-0.002	-0.017**	1.000		
(4) Post-dean (1=yes)	-0.008	-0.014*	-0.013*	1.000	
(5) Years since doctorate	-0.048***	0.111***	0.135***	0.143***	1.000

Notes: *** p<0.01, ** p<0.05, * p<0.1.

4.2 Multivariate Results

Next, we apply panel regression with fixed effects to test how research output might be affected by taking a position as a dean (H1 and H2). Further, we apply random effects to study whether deans are different from non-deans (H3). Model (1) in Table 4 shows the results from the fixed effects regression, model (2) shows the results from the random effects regression. All estimations include the whole sample, i.e. they include all person-year observations for researchers who were dean at some point in their career and all observations for researchers who have not (yet) been dean within the observation period.

In model (1), the coefficients for the dummy variables indicating dean years and post-dean years are significantly negative, hinting at the plausibility of H1 and H2. Our results thus indicate that there is a resource effect such that leadership in academia reduces a researcher's publication productivity during and potentially also post deanship. Also, during deanship, researchers might develop a "taste for service" and – after their office has ended – take on additional positions in the scientific community, thus further reducing their post-dean publication productivity.

With respect to selection into deanship, the pre-dean coefficient in our random effects estimation in model (2) of Table 4 is not significant, suggesting that researchers that become deans are not a negative selection in terms of their publication productivity. That is, our data does not support H3 on a negative self-selection effect.

Table 4: Results from Fixed- Effects and Random-Effects Panel Regression

	(1) Fixed Effects	(2) Random Effects
Pre-dean (1=yes)	-0.00467 (0.00801)	-0.00430 (0.00802)
Dean (1=yes)	0.560 -0.0190* (0.00976)	0.592 -0.0189* (0.00973)
Post-dean (1=yes)	0.0520 -0.0265** (0.0115)	0.0522 -0.0264** (0.0114)
Years since doctorate	0.0213 0.00360*** (0.000473)	0.0208 0.00358*** (0.000470)
Year of birth	6.1e-14	2.6e-14 0.00473*** (0.000558)
Gender (1=male, 0=female)		2.3e-17 0.0412*** (0.00821)
Business administration (1=yes, 0=economics)		5.16e-07 -0.0267*** (0.00674)
Age at doctorate		7.32e-05 -0.00514*** (0.00147)
Pre-doctorate publication points		0.000486 0.297*** (0.0480)
Decade dummies	Yes	Yes
Constant	0.0829*** (0.00662)	-9.065*** (1.113)
	9.6e-34	3.8e-16
Observations	22,717	22,717
Within R-squared	0.031	0.031
Between R-squared	0.023	0.113
Overall R-squared	0.011	0.069
Number of id	1,110	1,110

Notes: Huber-White robust standard errors in parentheses. P-Values below standard errors. *** p<0.01, ** p<0.05, * p<0.1. Reference decade: 2000 – 2010.

To analyze whether the effects are independent on *when* a researcher became dean in his or her career, we distinguish researchers that became deans comparatively early in their career (i.e. that are likely to have been rotated into office) from those that became deans at a later stage in their career (i.e. that likely self-selected into the office). Empirically, we split the

sample at the median career age of becoming a dean, i.e. the median number of years that have passed since obtaining the PhD at the time of becoming dean.

Models (1) and (3) in Table 5 show the estimation results when reducing the sample to “early deans” as compared to those researchers that have not (yet) become dean, models (2) and (4) contain the results for the “late deans” compared to those researchers that have not (yet) become dean.³

First, we again find no indication for a negative self-selection based on publication productivity, neither for the early nor for the late deans: the coefficient for the *pre-dean* dummy in our random effects regression (models 3 and 4) is non-significant for the early as well as the late deans. Second, in our fixed effects regression we find no reduction in publication productivity during or post deanship for early deans (model 1). Third, we do find a decreased publication productivity for late deans during and after deanship (model 2): For late deans, yearly publication points decrease by 0.03–0.05 per year, which is about one third of the yearly publication output (see Table 1). Hence, researchers who became dean late in their career drive the overall negative resource effect of deanship on publication productivity during and post deanship (Table 4).

Presumably, these late deans took a deliberate late career development shift towards a stronger engagement in the scientific community and becoming a dean. These deans might rather follow a conviction than simply being rotated into the office, and they might put in more time and effort into their deanship. As a result, their publication productivity during deanship and potentially also beyond might be lower. During deanship, they might develop a taste for service to the community, or their decision to become a dean might already indicate a shift towards stronger engagement in the scientific community. Thus, after deanship, researchers might also take up other offices and tasks (e.g., they become journal editors, organize conferences and serve on boards and committees).

³ The age of becoming a dean is empirically related to our control variables “year of birth” and “age at doctorate”. More recently born researchers in our sample are more likely to be “early” deans since they have fewer “late career years” in which they could become a “late dean”. Also, “early” deans were older when they obtained their doctorate.

Table 5: Results for Early and Late Deans

	Fixed Effects		Random Effects	
	Early Deans (1)	Late Deans (2)	Early Deans (3)	Late Deans (4)
Pre-dean (1=yes)	0.00741 (0.0106)	-0.00694 (0.00996)	0.00831 (0.0106)	-0.00712 (0.0100)
Dean (1=yes)	0.486 -0.00667 (0.0159)	0.486 -0.0319*** (0.0117)	0.434 -0.00633 (0.0158)	0.476 -0.0322*** (0.0117)
Post-dean (1=yes)	0.675 -0.00243 (0.0188)	0.00648 -0.0491*** (0.0119)	0.688 -0.00154 (0.0186)	0.00606 -0.0500*** (0.0117)
Years since doctorate	0.897 0.00421*** (0.000503)	3.75e-05 0.00380*** (0.000485)	0.934 0.00419*** (0.000499)	1.87e-05 0.00378*** (0.000482)
Year of birth	1.7e-16	01.2e-14	4.7e-17 0.00512*** (0.000578)	4.6e-15 0.00500*** (0.000553)
Gender (1=male, 0=female)			8.1e-19 0.0402*** (0.00833)	1.5e-19 0.0424*** (0.00837)
Business administration (1=yes, 0=economics)			1.36e-06 -0.0292*** (0.00697)	4.06e-07 -0.0242*** (0.00688)
Age at doctorate			2.75e-05 -0.00487*** (0.00155)	0.000441 -0.00451*** (0.00141)
Pre-doctorate publication points			0.00166 0.269*** (0.0462)	0.00137 0.345*** (0.0564)
Decade dummies	Yes	Yes	Yes	Yes
Constant	0.0539 0.0812*** (0.00651)	0.0102 0.0811*** (0.00657)	0.0574 -9.836*** (1.154)	0.0116 -9.614*** (1.098)
	2.1e-33	7.9e-33	1.6e-17	2.0e-18
Observations	20,534	21,209	20,534	21,209
Within R-squared	0.036	0.033	0.036	0.033
Between R-squared	0.020	0.029	0.106	0.119
Overall R-squared	0.001	0.000	0.069	0.074
Number of id	1,046	1,056	1,046	1,056

Notes: Huber-White robust standard errors in parentheses. P-Values below standard errors. *** p<0.01, ** p<0.05, * p<0.1. Reference decade: 2000 – 2010.

The number of observations in models 1 and 2 of Table 5 do not add up to the number of observations in model 1 of Table 4 due to a large number of researcher-year observations belonging to researchers who have not (yet) been dean, which are included in both, model 1 and 2 of Table 5. The same refers to models 3 and 4 in Table 5 as compared to model 2 in Table 4.

4.3 Robustness Checks

As a first robustness check, we extended our analysis of post-dean effects not only to three years after deanship, but we also include later periods (up to 15 years after deanship, see Tables A1 and A2 in the appendix). We find the negative post-dean effects to be persistent over the years, and we again find them to be driven by the late deans.

As a further robustness test, we ran our analysis separately for the 50% top and 50% bottom researchers – where top or bottom were calculated based on the average publication productivity per researcher. Results (see Table B in the appendix) show that the top 50% performers mainly drive our results.

Lastly, we ran a random effects Tobit analysis (see Table D in the appendix), as the dependent variable of publication output is censored at zero. Again, we find our results to be robust: Dean and post-dean years are negative, and the late deans drive the effect.

4.4 Illustrative qualitative evidence

To enhance our understanding of the mechanisms behind potential effects of deanship on research output, we can also draw on nine illustrative interviews with deans at business and/or economics faculties. The interviews were conducted in fall 2013, shortly after the end of the observation period in our quantitative dataset.

The qualitative evidence clearly supports a *resource effect* during deanship: Several of our interviewees point to the office as being time-consuming (e.g., interviewees #4, #5 and #7). Interviewee #7 would give his successor the following advice:

"Do not hope that you publish a lot in the next three years. That's important because it makes you frustrated, because if you really have the idea you could somehow do most things like before and then just realize that this is not the case, you either get very frustrated or you invest so much time that you somehow suffer otherwise."

Concerning *self-selection* into the office, we asked our interviewees for their motivation to become a dean. Five out of nine deans stated that they were rotated into the office (interviewees #1, #2, #3, #4, #6). The following quotes are exemplary:

„I did not apply [for the position], it rotates at our institution and whoever does not act too stupidly has to do it someday..." (interviewee #6),

"no, no-one volunteers here at the faculty" (interviewee #1);

„everyone is so unmotivated to become dean that there would be no substitute candidate” (interviewee #4).

To the contrary, when asked for his personal motivation to become a dean, interviewee #9 who was not rotated into the office elaborates on two different “types” of deans: re-active deans that focus on solving problems that can no longer be ignored and that need an immediate solution as opposed to active ones that aim at literally shaping their faculties during their deanship. Having actively decided to run for the office, he follows the second model:

„Let me put it this way, there are, in my view, two basic types, strongly simplified, how to practice a deanship. One is the "fire extinguisher" who is waiting for something to escalate in the department and then comes to look for solutions, but does not become active on its own. And the other is the "designer", who gives himself a project agenda, also has a plan and implements this. So, the passive vs. the active, maybe we'll do it that way. These are the basic possibilities, they represent completely different styles, also referring to the question how to tackle things and how to exercise the office. I myself follow the second model.“ (interviewee #9)

That is, our interviewee supports the view that deans which are not rotated into the office (presumably the “later” deans) might put in more time and effort into their deanship.

Concerning the question whether “early deans” are more often rotated into the office than “late deans”, our qualitative evidence does not offer many insights, as by chance our interviewees are rather young. Descriptively, we see a small difference between the average age of becoming a dean for those who were rotated into office (41 years of age) and those that became dean without a rotation system (43 years of age).

5 Discussion and Conclusion

There is no negative self-selection into deanship in the sense that researchers running for the office were to show a lower pre-dean publication productivity than their peers. This applies to researchers that become dean early in their career and that are presumably rotated into the office, and it also applies to researchers that become dean late in their career and that most likely deliberately decide to run for the office. Judged by their *pre-dean* publication productivity, deans are undistinguishable from their peers.

During and post-deanship, however, deanship decreases research productivity over the whole sample of deans: Publication productivity is reduced, both during and after being a dean as compared to those researchers that never became dean. Interestingly, however, if we split the sample this is only the case for those researchers that become dean late in their careers but not for researchers that become dean early in their career. Thus, it seems that the late deans undertake a deliberate late career shift, and advance a second career towards serving the scientific community, in which they invest considerable time and resources that reduce their publication productivity during deanship and beyond. Alternatively, those late deans might have developed a taste for service during their deanship.

Interpreting the results is rather speculative. In particular, we cannot observe whether these late deans are actually more active in their office than early deans, but it seems likely that they really invest in their “second career” and want to have an impact as a dean since we observe that they cut down on own research output. What we also do not know is whether this potentially increased activity by the late career deans translates into more successful faculty management. But, with more active and engaged deans, strategic agenda setting and change initiatives would at least seem more likely – rendering late career deans a potentially important asset in a volatile environment with increasingly challenging demands and a stronger need for changes in how Faculties are functioning and governed.

For a good university governance, this raises multiple questions. The first question to be answered is whether a Faculty faces major and potentially disruptive challenges or not. If not, i.e. if a Faculty can be coursed through smoothly without too much of an engagement, then it can most likely be also led by an early dean, i.e., a rather junior faculty member who – potentially – is more concerned with keeping up his or her own publication record during the office and has few interest in change. In this case, rotating researchers into the dean’s office might in fact be an effective university governance mechanism. However, in times when a Faculty faces “stormy waters” and expects major and potentially disruptive challenges, it will rather need a dean that deliberately runs for the office as a second career and is ready to invest considerable time and resources – even if that reduces own publication productivity.

Second, our findings also show that – under the current governance structure – there is no negative self-selection into deanship concerning publication productivity: Neither early deans nor late deans show a lower publication productivity when they enter the office. This is an important finding, because – as Bäker and Goodall (2017) have convincingly argued – academic leadership should be *expert leadership* to be really effective. Hence, if a Faculty ex-

pects to face major challenges and thus wants to recur on a professional dean who wholeheartedly runs the office and pushes for change, it will still be advisable to choose a dean with a good publication record and inside knowledge on the academic production function, i.e. to choose an *expert* leader, and not to induce a negative self-selection with respect to research productivity when the governance regime shifts towards professional deanship.

Of course, our study is not without limitations. A first and obvious limitation is that we cannot distinguish correlation from causality. The second limitation is that we rely on data from one specific institutional context and from two specific disciplines. Future studies might want to analyze in how far our results can be substantiated in other contexts and in other disciplines. The third limitation is that we do not have data on the amount of working time that deans devote to their office and thus can only speculate how the early deans manage to compensate for the reduced resources during deanship and why this differs from the effects for the late deans. However, our study gives a first indication in this respect, and future studies might want to further explore this question.

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Appendix

Table A1: Results from Fixed- Effects and Random-Effects Panel Regression: Looking further into the future

	(1) Fixed Effects	(2) Random Effects
Pre-dean (1=yes)	-0.00990 (0.00815) 0.225	-0.00883 (0.00818) 0.280
Dean (1=yes)	-0.0316*** (0.0114) 0.00555	-0.0306*** (0.0113) 0.00671
Post-dean (1=yes)	-0.0393*** (0.0129) 0.00237	-0.0383*** (0.0128) 0.00276
4-6 years post dean (1=yes)	-0.0431** (0.0169) 0.0108	-0.0417** (0.0169) 0.0138
7-9 years post dean (1=yes)	-0.0575*** (0.0185) 0.00194	-0.0558*** (0.0185) 0.00263
10-12 years post dean (1=yes)	-0.0524** (0.0209) 0.0124	-0.0502** (0.0210) 0.0167
13-15 years post dean (1=yes)	-0.0221 (0.0331) 0.505	-0.0192 (0.0341) 0.574
Constant	0.0829*** (0.00662) 9.3e-34	-9.034*** (1.112) 4.4e-16
Observations	22,662	22,662
Within R-squared	0.033	0.033
Between R-squared	0.023	0.112
Overall R-squared	0.001	0.069
Number of id	1,110	1,110

Notes: Huber-White robust standard errors in parentheses. P-Values below standard errors. *** p<0.01, ** p<0.05, * p<0.1. Controls: years since doctorate, year of birth, gender, business administration, age at doctorate, pre-doctorate publication points, dummies for decades.

Table A2: Results for Early and Late Deans: Looking further into the future

	Fixed Effects		Random Effects	
	Early Deans (1)	Late Deans (2)	Early Deans (3)	Late Deans (4)
Pre-dean (1=yes)	0.00916 (0.0118)	-0.0158 (0.0100)	0.0107 (0.0117)	-0.0155 (0.0101)
Dean (1=yes)	0.436 -0.0101 (0.0180)	0.116 -0.0510*** (0.0123)	0.358 -0.00908 (0.0177)	0.124 -0.0507*** (0.0123)
Post-dean (1=yes)	0.572 -0.00761 (0.0202)	3.87e-05 -0.0685*** (0.0133)	0.609 -0.00570 (0.0200)	3.79e-05 -0.0689*** (0.0128)
4-6 years post dean (1=yes)	0.707 -0.0162 (0.0258)	3.13e-07 -0.0680*** (0.0189)	0.776 -0.0141 (0.0261)	7.01e-08 -0.0681*** (0.0185)
7-9 years post dean (1=yes)	0.530 -0.0381 (0.0251)	0.000327 -0.0734*** (0.0272)	0.591 -0.0353 (0.0248)	0.000229 -0.0732*** (0.0274)
10-12 years post dean (1=yes)	0.130 -0.0156 (0.0301)	0.00709 -0.0917*** (0.0251)	0.155 -0.0120 (0.0297)	0.00747 -0.0914*** (0.0253)
13-15 years post dean (1=yes)	0.605 0.0127 (0.0415)	0.000266 -0.0792* (0.0462)	0.686 0.0158 (0.0432)	0.000301 -0.0777* (0.0471)
Constant	0.760 0.0810*** (0.00650)	0.0869 0.0809*** (0.00654)	0.715 -9.837*** (1.146)	0.0987 -9.617*** (1.096)
	2.7e-33	6.6e-33	9.0e-18	1.8e-18
Observations	20,522	21,166	20,522	21,166
Within R-squared	0.037	0.036	0.037	0.036
Between R-squared	0.021	0.027	0.105	0.120
Overall R-squared	0.001	0.001	0.069	0.076
Number of id	1,046	1,056	1,046	1,056

Notes: Huber-White robust standard errors in parentheses. P-Values below standard errors. *** p<0.01, ** p<0.05, * p<0.1. Controls: years since doctorate, year of birth, gender, business administration, age at doctorate, pre-doctorate publication points, dummies for decades.

Table B: Results for the Bottom 50% vs. the Top 50% Researchers

	Fixed Effects		Random Effects	
	Bottom 50% (1)	Top 50% (2)	Bottom 50% (3)	Top 50% (4)
Pre-dean (1=yes)	0.00923* (0.00523)	-0.0243 (0.0164)	0.00981* (0.00520)	-0.0250 (0.0162)
Dean (1=yes)	0.0781 0.00577 (0.00562)	0.138 -0.0540** (0.0228)	0.0592 0.00618 (0.00544)	0.124 -0.0553** (0.0225)
Post-dean (1=yes)	0.304 -0.00381 (0.00483)	0.0180 -0.0520* (0.0283)	0.256 -0.00405 (0.00462)	0.0139 -0.0532* (0.0276)
Constant	0.430 0.0223*** (0.00384)	0.0667 0.156*** (0.0122)	0.380 -2.675*** (0.484)	0.0538 -8.581*** (2.163)
	9.68e-09	8.7e-33	3.22e-08	7.25e-05
Observations	12,338	10,379	12,338	10,379
Within R-squared	0.007	0.068	0.007	0.068
Between R-squared	0.119	0.003	0.192	0.040
Overall R-squared	0.002	0.034	0.041	0.063
Number of id	554	556	554	556

Notes: Huber-White robust standard errors in parentheses. P-Values below standard errors. *** p<0.01, ** p<0.05, * p<0.1. Controls: years since doctorate, year of birth, gender, business administration, age at doctorate, pre-doctorate publication points, dummies for decades.

Table C: Tobit-Results from Random-Effects Panel Regression

	(1) All	(2) Early Deans	(3) Late Deans
Pre-dean (1=yes)	0.00826 (0.0120)	0.0219 (0.0160)	0.00589 (0.0160)
Dean (1=yes)	0.490 -0.0261* (0.0137)	0.172 -0.00695 (0.0184)	0.712 -0.0536*** (0.0204)
Post-dean (1=yes)	0.0563 -0.0413** (0.0164)	0.706 -0.000538 (0.0216)	0.00862 -0.0958*** (0.0254)
Years since doctorate	0.0116 0.00738*** (0.000619)	0.980 0.00820*** (0.000653)	0.000162 0.00788*** (0.000647)
Year of birth	8.9e-33 0.0104*** (0.000854)	3.2e-36 0.0107*** (0.000900)	3.9e-34 0.0110*** (0.000884)
Gender (1=male, 0=female)	6.0e-34 0.0628*** (0.0189)	2.2e-32 0.0613*** (0.0189)	2.1e-35 0.0633*** (0.0192)
Business administration (1=yes, 0=economics)	0.000898 -0.0720*** (0.0111)	0.00120 -0.0756*** (0.0113)	0.00101 -0.0671*** (0.0113)
Age at doctorate	7.67e-11 -0.00816*** (0.00240)	2.3e-11 -0.00778*** (0.00246)	3.00e-09 -0.00729*** (0.00245)
Pre-doctorate publication points	0.000687 0.586*** (0.0717)	0.00160 0.553*** (0.0742)	0.00293 0.671*** (0.0807)
Decade dummies	3.2e-16 Yes	9.4e-14 Yes	9.8e-17 Yes
Constant	-20.15*** (1.693)	-20.75*** (1.787)	-21.38*** (1.754)
Observations	1.1e-32 22,717	3.6e-31 20,534	3.4e-34 21,209
Number of id	1,110	1,046	1,056
AIC	8560.805	7864.441	8138.866

Notes: Huber-White robust standard errors in parentheses. P-Values below standard errors. *** p<0.01, ** p<0.05, * p<0.1.