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Do Open Acccess Publishing Agreements Work? – The Case of Top Tier Business Journals

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▶ Open Acccess Week 2024

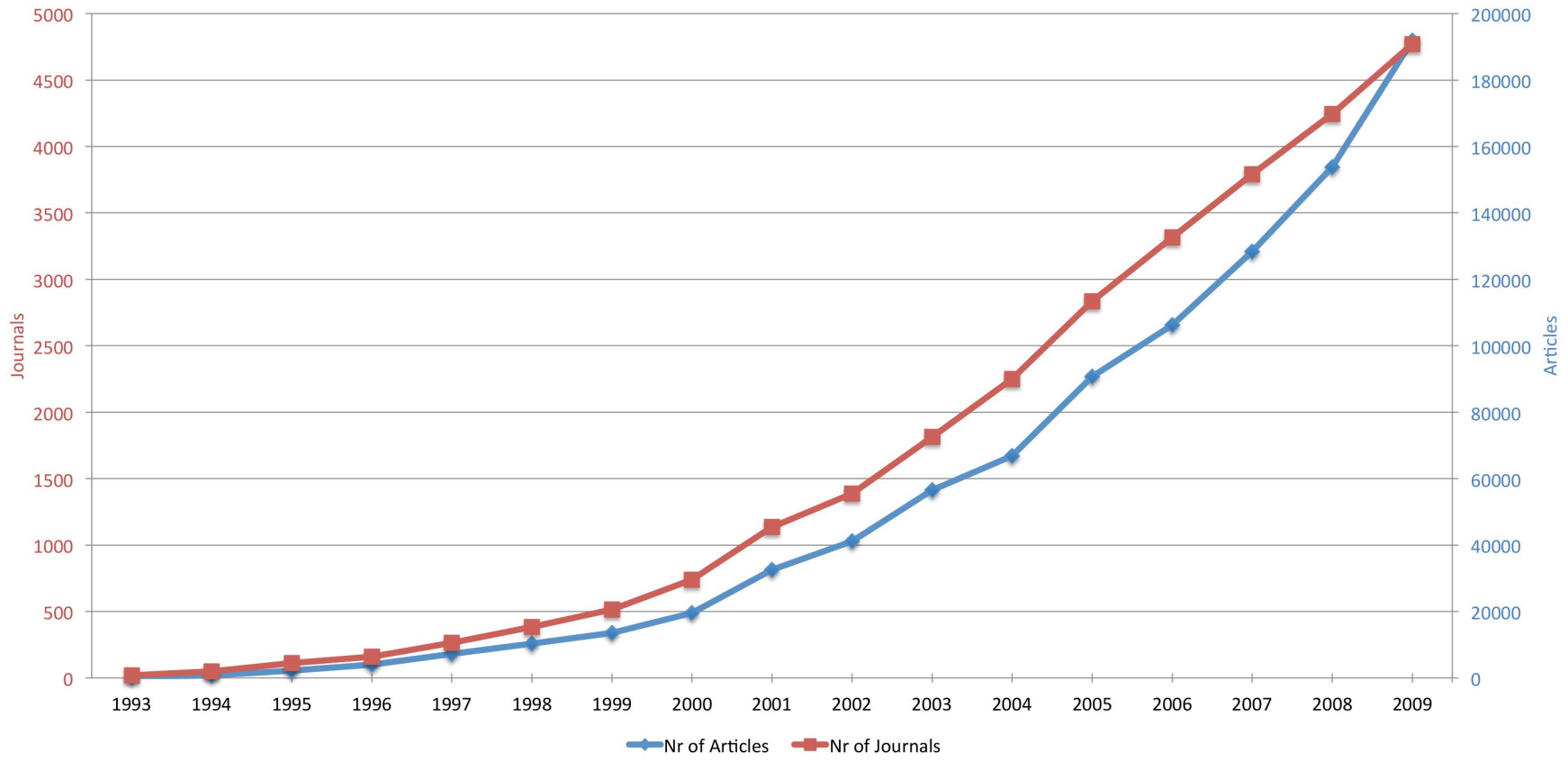
Agenda

- Introduction
- Literature Background
- Methods
- Results
- Discussion

Introduction

History, Types and Effects of Open Access

Introduction



- Number of Open Access Articles/Journals (Laakso et al., 2011)

Introduction

- Open access publishing agreements waive APCs for authors (Borrego et al., 2021)
  - Offsetting agreements, transformative agreements, open access deals
  - Contracts on institutional, multi-institutional or national levels
- National open access publishing agreements (ESAC, 2022)
  - Association of Universities in the Netherlands with Springer, Wiley and SAGE
  - Austrian Library Consoritum with Elsevier, Springer and T&F
  - Germany Project DEAL
  - Switzerland: Consortium of University Libraries together with swissuniversities
- Institutional open access publishing agreements (ESAC, 2022)
  - University of California and University of Florida with Elsevier
  - Iowa State University with Cambridge University Publishing and Oxford University Publishing

Introduction

- Why open access?
  - Open access democratizes science (Herb, 2010)
    - Researchers from all backgrounds can access articles
    - Scholars from developing countries lacking subscriptions and funds to pay for article access (Nwagwu, & Ahmed, 2009)
    - Publishers give discounts on APCs for low-income countries (Solomon, & Björk, 2012)
  - Individuals outside of academia can access articles
    - Practitioners do not benefit from institutional subscriptions (Sunderland et al., 2009)
  - There exists “a growing consensus that publicly funded research should be publicly available” (Chan, Kirsop, & Arunachalam, 2005: 3)

- Open access publishing agreements could sway the way for inclusive science that advances society (Spezi et al., 2017)

Introduction

- Only one case study looking at effects of signed agreements (Earney, 2017)
  - Jisc signed agreement with Springer starting with 2016
  - November 2015: 160 open access publications by Jisc members
  - November 2016: 270 open access publications by Jisc members
- Single case study is not generalizable
  - Correlational evidence ≠ causality
  - Self-selection of members into Jisc
  - Additional members joining Jisc because of agreement
- **Research Question:**
  - Did the implementation of open access publishing agreements on national and institutional levels enhance open access publishing?

Literature Background

Open Access & Open Access Publishing Agreements

Open Access Prevalence

- Open access publications vary across geographical regions and disciplines (Wang et al., 2018)
  - Wageningen University: 41.6% OA
  - Universities in Berlin: 25.1% OA
  - Universities as publishers in Latin America (Beceril Garcia et al., 2018)
  - 50% of articles gold open access in biomedical research (Piwowar et al., 2018)
  - 10% of articles gold open access in engineering research (Piwowar et al., 2018)
- Other factors influencing open access publishing
  - Requirements and provisions of funding agencies (Lariviere, & Sugimoto 2018)
  - Scholars' perception of associated advantages and disadvantages (Shuya, & Taisir, 2016)
    - Demotivating: Paying APCs out of own budget

Motivation for Open Access

- Citation advantage of open access publications?
  - Initial studies suggested higher citations (Antelman, 2004; Eysenbach, 2006; Davis, 2009; Lawrence, 2001)
  - Issues from differences in quality between open access and subscription journals (Atchison, & Bull, 2015)
  - Scholars self-select best papers for open access publishing (Gaule, & Maystre, 2011)
  - Field experiments among journals published by *American Physiological Society* (Davis et al., 2008; Davis, 2011)
    - Authors randomly assigned articles to be published open access
    - No citation differences between open access and non-open access publications
  - Follow-up studies controlling for impact factors and self-selection found modest citation advantages (Müller-Lang, & Watt, 2014; Ottaviani, 2016; Sotudeh, & Estakhr, 2018)

Open Access and Career Stage

- Publications primary output metric (Sestak et al., 2018)
  - Scholars want to signal unobservable quality like Kirmani & Rao (2000)
  - Past assessments included impact factors, citations, … (Holden et al., 2006)
  - Strong critiques due to malicious incentives (Hendriks et al., 2016)
  - Scholars calling for more thorough assessments including full publications (e.g. Guthrie et al., 2019; Ioannidis, 2012; Seeber et al., 2019; Thelwall, 2017)
- Open access publishing enables free access for search, application and tenure committee members
  - Scholars can signal research quality openly and transparently
    - Like open source signaling (Lerner, & Tirole, 2002)
  - Junior scholars more frequently run through application and tenure processes
- **Hypothesis 1:** *Junior scholars more often publish open access articles*

Number of Affiliations and Open Access

- High APCs without open access publishing agreements (Laakso, & Björk, 2016)
- Most research is published multi-authored
  - 79.6% of articles in high impact economic journals (Hamermesh, 2015)
- Open access publishing agreements require only corresponding author (Eysenbach, 2006)
  - Authors with multiple institutions -> higher chances of benefitting
  - Similar to firms using inter-organizational networks like joint ventures, spin-ins and spin-offs and non-equity alliances to foster their innovation success (Simard, & West, 2008)
- **Hypothesis 2:** *The more affiliations the authors of a paper possess, the likelier it is that the article is published open access.*

Number of Countries and Open Access

- Inter-organizational open innovation processes emerged historically in regional clusers (Silicon Valley, Greater Boston Area) (Tödtling, & Trippl, 2011)
  - Change through “metanational companies” (Doz et al, 2001)
  - Global search for “right” R&D partners (Vanhaverbeke, 2006)
  - Innovative companies rely on global innovation networks (Cano-Kollmannm, 2018)
- Internationalization also in scientific research
  - Share of international papers rose from 14% in 2000 to 25% in 2011 (Gazni et al., 2011; Leydesdorff et al., 2013)
- Open access publishing agreements on national level (Bulock, 2015)
- **Hypothesis 3:** *The more international an author team is, the likelier the publication is an open access article*

Methods

Bibliometric Study of FT-50 journals

Methods

- Specifically address business research
  - Single discipline to avoid discipline differences (Wuchty et al., 2007)
  - Social sciences with low usage of open access (Wang et al., 2018)
  - Business scholars aware of theoretical mechanisms
  - Business scholars observe collaborations in the corporate world

- FT-50 Journals (*Financial Times, 2016*)
  - Most prestigious journals (Fassin, 2021)
  - Focusing on high-quality journals to delimitate any potential quality-open access relationship (Piwowar et al., 2018)
  - None of the journals constitutes gold open access journal

Methods

- Bibliometric query
  - Research articles, reviews and conference papers published between 2010 and 2019
  - Full bibliometric information from SCOPUS
  - Initially 36,505 publications
  - Python matching with full author names from Web of Science
    - 33,073 matches
    - Manual check of 752 discrepancies in authors' last names
    - Manual check for all unmatched publications from SCOPUS
      - Further inclusion of 3,081 publications
  - Dataset included 36,154 publications
  - Final sample only 33,440
    - Exclusion of observations with missing values in variables
    - Exclusion of *Harvard Business Review* and *MIT Sloan Management Review*

Methods

- Variables
  - Dependent variables
    - *Hybrid Open Access* (APCs) (Harnard et al., 2004)
    - *Bronze Open Access* (Open access but no license) (Piwowar et al., 2018)
    - *Green Open Access* (Repositories, institutional websites, …) (Green, 2017)
    - *Open Access* (combination of all open access variables)
  - Independent variables
    - *Share of Junior Scholars* (if no publication in FT-50 prior to 2010)
    - *Number of Institutions*
    - *Number of Countries*
  - Control variables
    - *Women Ratio* via World Gender Name Directory (Rafoo, & Lax-Martinez, 2018)
    - *Number of Authors*, *Average Publications*, *Paper Length*, *Title Length, Document Type*
    - Journal and Year fixed-effects

Results

Descriptives and inferences

Results

- Descriptive Statistics

Table 1: Descriptive statistics of open access variables

Open Access Type	Frequencies	Percentage
Hybrid Open Access	675	2.02%
Bronze Open Access	984	2.94%
Green Open Access	9920	29.67%
No Open Access	21861	65.37%
Total	33440	100.00%

Results

- Descriptive Statistics

Table 2: Descriptive statistics of continuous independent and the control variables

Variable	Mean	Std. Dev.	Minimum	Maximum
Share of Junior Scholars	0.4849	0.3548	0	1
Number of Institutions	2.3630	1.2143	1	49
Number of Countries	1.5190	0.8021	1	30
Women Ratio	0.2864	0.3401	0	1
Number of Authors	2.6280	1.1975	1	51
Average Publications	6.2865	5.8854	1	77
Paper Length	21.2167	10.8241	0	238
Title Length	80.6393	30.0235	5	325

Note: N. of observations for all variables is 33440.

Results

- Descriptive Statistics

Table 3: Descriptive statistics of Type

Document Type	Frequencies	Percentage
Research Article	30678	91.74%
Review	1440	4.31%
Conference Paper	1322	3.95%
Total	33440	100.00%

Results

Table 5: Regression antecedents to open data publications

	Model 1 Hybrid Open Access	Model 2 Bronze Open Access	Model 3 Green Open Access	Model 4 Open Access
Independent Variables				
Share of Junior Scholars	-0.307**	-0.085	0.004	-0.052
	(0.148)	(0.120)	(0.045)	(0.042)
Number of Institutions	-0.231***	0.122**	0.075***	0.062***
	(0.061)	(0.049)	(0.020)	(0.018)
Number of Countries	0.432***	-0.029	0.326***	0.308***
	(0.063)	(0.053)	(0.021)	(0.020)
Controls				
Women Ratio	-0.148	0.108	-0.037	-0.028
	(0.121)	(0.111)	(0.041)	(0.038)
Number of Authors	-0.010	-0.039	0.016	-0.008
	(0.046)	(0.049)	(0.018)	(0.017)
Average Publications	-0.033***	0.029***	-0.008***	-0.003
	(0.013)	(0.006)	(0.003)	(0.003)
Paper Length	0.027***	0.006	0.008***	0.011***
	(0.006)	(0.004)	(0.002)	(0.002)
Title Length	-0.001	-0.004***	-0.001**	-0.002***
	(0.001)	(0.001)	(0.000)	(0.000)
Conference Paper	-0.577	-1.228***	0.003	-0.202***
	(0.602)	(0.220)	(0.083)	(0.074)
Review	0.105	0.814***	-0.163**	0.159**
	(0.286)	(0.120)	(0.070)	(0.062)
Journal Fixed Effects	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included
Chi^2	1134.82	1865.76	4891.09	6010.02
$p > Chi^2$	0.000	0.000	0.000	0.000
Pseudo R2	0.1851	0.2141	0.1203	0.1095
Observations	23656	30811	33440	33440

† p<0.1, * p<.05, ** p<.01, *** p<0.01

Methods

- Robustness checks

Table 6: Model robustness

	Model 1 (Hybrid Open Access)					**Model 2** (Bronze Open Access)				
	Models	**Mean (b)**	**Robustness Ratio**	**Sign Stability**	**Sig. Rate (α<0.05)**	**Models**	**Mean (b)**	**Robustness Ratio**	**Sign Stability**	**Sig. Rate (α<0.05)**
Share of Junior Scholars	1,024	0.2400	0.5331	63%	83%	1,024	-0.0085	-0.0260	50%	77%
Number of Institutions	1,024	-0.1056	-0.7256	55%	62%	1,024	0.1602	1.7648	100%	100%
Number of Countries	1,024	0.3716	2.5642	100%	100%	1,024	0.0204	0.2614	50%	23%
	Model 3 (Green Open Access)					**Model 4** (Open Access)				
	Models	**Mean (b)**	**Robustness Ratio**	**Sign Stability**	**Sig. Rate (α<0.05)**	**Models**	**Mean (b)**	**Robustness Ratio**	**Sign Stability**	**Sig. Rate (α<0.05)**
Share of Junior Scholars	1,024	0.0534	0-7232	76%	37%	1,024	0.0272	0.6020	63%	76%
Number of Institutions	1,024	0.1652	2.2145	100%	100%	1,024	0.0358	1.5357	100%	89%
Number of Countries	1,024	0.3294	6.5917	100%	100%	1,024	0.0906	9.6486	100%	100%

Note: Results report the robustness of the variable coefficients across all possible combinations of possible model components (Young and Holsteen, 2016). Models 1-3 are derived from logistic regressions. Model 4 is derived from OLS regression.

Discussion

Implications and future research

Discussion

- Minority of publications in FT-50 are open access
- No effects of junior scholar (H1)
  - Junior scholars have less budget (Roumbanis, 2019)
  - Junior management scholars need first authorship (Balkin et al., 2018)
- Positive effect of multi-institution on open access (H2)
  - Strong & robust effect for bronze and green open access
    - More institutions -> Likely to have institutional repository (e.g., ARBOR)
  - No robust effect for hybrid open access
    - Institutional open access publishing agreements require substantial efforts and resources (Geschuhn, & Stone, 2017)
- Positive effect of international collaborations on open access (H3)
  - Positive effect on hybrid open access supports effectivity of open access publishing agreements

Discussion

- Practical implications
  - Lack of diamond or at least gold open access journals requires substantial funding to access and publish research
    - Vicious circle for underprivileged scholars
    - Societies like AOM, AEA, … should establish gold open access journals
  - Lack of open access publications is problematic for practitioners
    - Wikipedia mostly refers to open access publications (Teplitskiy et al., 2017)
    - Open access articles much more accessed after sharing in Twitter (Keller et al., 2014)
    - Bridge journals (*Haravard Business Review, MIT Sloan Management Review*) do not allow even green open access publications
    - Every journal should at least provide hybrid open access options
  - Education and training of junior scholars required
    - PhD courses on publishing should inform about open access publishing process
    - Workshops for entrants on existing (funding) support for open access

Discussion

- Practical implications
  - National open access publishing agreements foster hybrid open access publications
  - National agencies increased bargaining power over scientific publishers (Heijne, & van Wezenbeek, 2018)
    - Green open access widespread alternative
  - International efforts to setup open access publishing agreements
    - In Europe: *European Research Council* and/or *Directorate-General for Research and Innovation*

Discussion

- Future Research
  - Directly assessing effects from new implementations of open access publishing agreements
    - Multiple contracts
    - Comparison of institutional vs. national open access publishing agreements
  - Open access publishing agreement effects in new contexts
    - Lower impact factors
    - Geographical regions (language)
    - Comparison to other social scientific disciplines (e.g. psychology, sociology, …)
  - Survey research
    - Assessment of individual level factors
    - Corresponding author switches
    - Relationship between open access and other OIS practices like open data, preregistration?

Conclusion

Conclusion

- Business research must foster open access publications
- Academic societies should introduce diamond open access journals
- All journals should allow hybrid open access publications
- Universities should educate junior scholars about open access opportunities
- (Inter-)National science agencies should negotiate open access publishing agreements

Thank you for your attention!

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Back-up slides

Theory

- Signaling
  - Signals represent “observable characteristics attached to the individual that are subject to manipulation by him [sic]” (Spence, 1973: 357)
  - Many applications beyond job market
    - Impact of product reviews (Basuroy et al., 2006)
    - Effects of brand stability (Leischnig, & Enke, 2011)
    - Information on crowdfunding websites (Kunz et al., 2017)
    - Unobservable product quality (Kirmani, & Rao, 2000)
  - Innovation/Science applications
    - Open-source programing as signal for employers (Lerner, & Tirole, 2002; Orman, 2008)
    - PhD school affiliations as signals for research productivity (Flagg et al., 2011)
- Open Innovation in Science (Beck et al., 2020, 2021)
  - Complementarities and synergies between open innovation and open science
  - Follow this approach by combining management theory with open science

Methods

- Robustness checks
  - Models with robust standard errors
  - OLS regressions for VIFs -> all VIFs below “conservative threshold of 5” (Alauddin and Nghiemb, 2010: 351)
  - Exclusion of authors with names not in WGND
  - Combination of *Hybrid Open Access* and *Bronze Open Access*
    - Coefficients of *Number of Institutions* and *Number of Countries* significantly positive

Discussion

- Theoretical implications
  - Applicability of economic and management theory to academia (Tight, 2012)
    - Scientists behave according to their incentives
    - HR and policy decisions in university should rely on OB research results
  - Validity of OIS (Beck et al., 2020)
    - Author teams mirror research teams in for-profit organizations
    - Inter-organizational and international collaborations induce openness (Lee et al., 2010)

Discussion

- Limitations
  - Results only from FT-50 journals
    - Different effects for lower impact journals and in other geographical regions
  - Open access rapidly changing field (Laakso et al., 2011)
    - Data including up to 2019
    - Fast implementation of recommendations
  - Bibliometric study
    - SCOPUS better than WoS but few articles not indexed (Mongeon, & Paul-Hus, 2016)
    - Gender assessment might not apply to all researchers
  - Independent variables capture two effects
    - Open access publishing agreements
    - Quality of scholars' networks
    - Disentangle through separation of gold and green open access