

Do Journals in Economics foster replicable Research?



Munin Conference on Scholarly Publishing

Twelfth Annual Conference, 22–23 Nov. 2017, Tromsø, Norway

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12th Munin Conference - Tromsø / Norway - 2017/11/23

Agenda:

1. Introduction

- *Definitions of replication*
- *Economics research methodology in past and present*
- *The replication crisis in economic sciences*

2. Journals' data policies and their effective enforcement

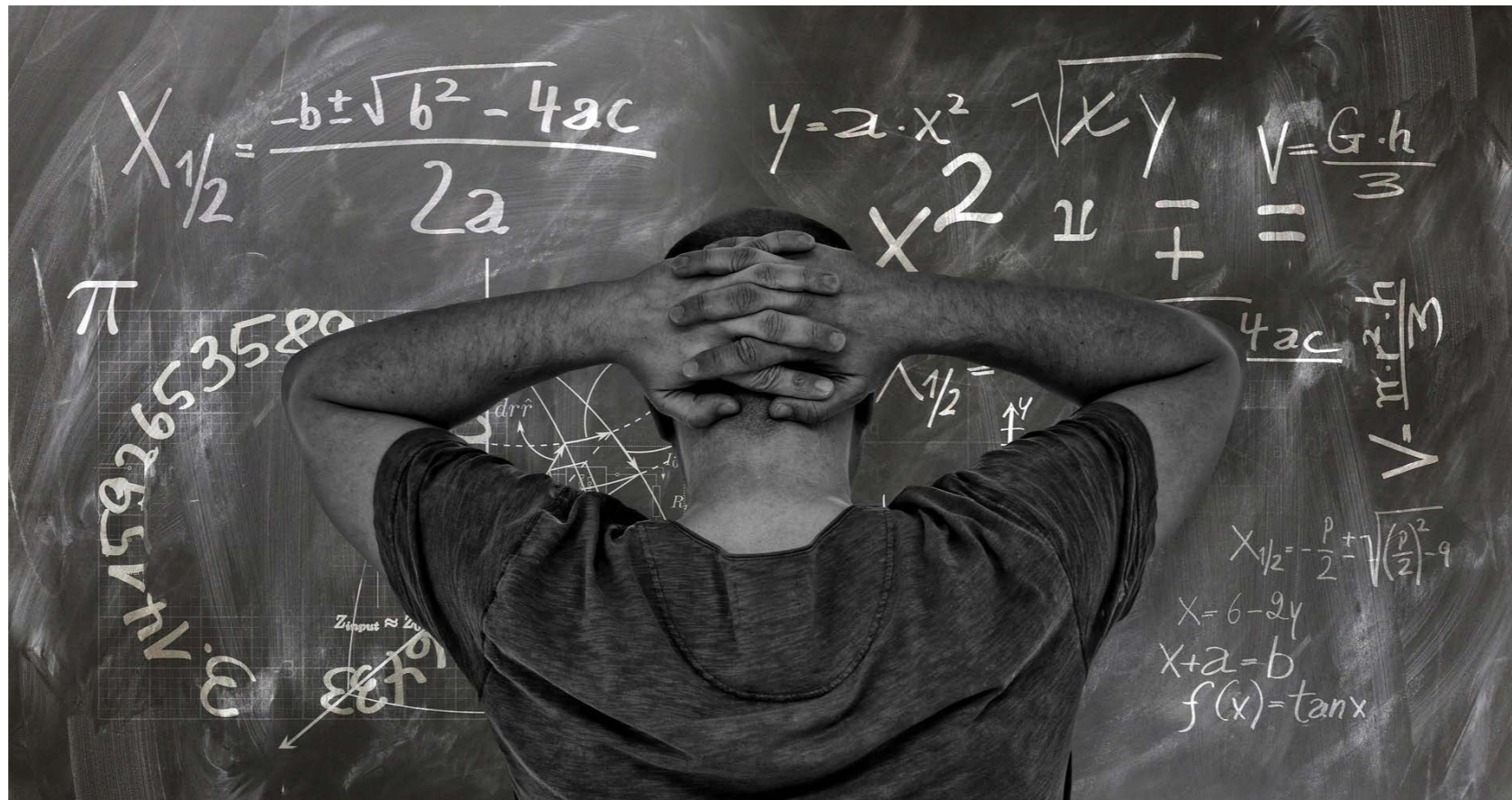
- *Data policies of journals in economics and management*
- *Do journals enforce their data policies?*
- *Take home messages*

3. Journals as publication outlets for replication studies

- *Replications published in economic journals*
- *Replication section*
- *Replication journal*
- *Conclusion*

1. Introduction: Transformations in economics research methodology and the replication crisis

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„Replication research is vital to the integrity of science. It is the primary means for assessing the validity, reliability, and generalizability of scientific findings.“

(Hubbard, 2017)

1.1 Definitions of replication:

TABLE 1
Six Different Kinds of Replications

<i>Measurement and/or Analysis</i>	<i>Source of Data</i>		
	<i>Same dataset</i>	<i>Same population</i>	<i>Different population</i>
<i>Same</i>	<i>(1) Reproduction</i>	<i>(3) Repetition</i>	<i>(5) Extension</i>
<i>Different</i>	<i>(2) Robustness Analysis – Same Dataset</i>	<i>(4) Robustness Analysis – Same Population</i>	<i>(6) Robustness Analysis – Different Population</i>

W.R. Reed (2017). Replication in Labor Economics, Working Paper
No. 6/2017.

<http://www.econ.canterbury.ac.nz/RePEc/cbt/econwp/1706.pdf>

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1.2 Economics research methodology in past and present

- Hamermesh* analysed 728 articles published in economics top-journals between 1963 and 2011
 - Findings: Methodology used by researchers changed fundamentally
 - ✓ Research based on borrowed or self-collected datasets, experimental designs or simulations reached 80% in 2011
 - ✓ In 1963 this share was below 50%
- ⇒ More than ever, research in economics is based on utilising research data

*Hamermesh, D. S. (2012), Six Decades of Top Economics Publishing: Who and How? National Bureau of Economic Research, Working Paper 18635, DOI: 10.3386/w18635

1.3 The replication crisis in economic sciences

- Dewald et al. (1986) tried to replicate 54 articles of the *Journal of Money, Credit, and Banking (JMCB)*. They succeeded two times (3.7%).
- Hubbard & Armstrong (1994) analysed 1,120 papers in marketing journals. None of these were replications; 1.8% were extensions. Of these extensions, 60% found conflicting results.
- McCullough et al. (2008) tried to replicate 117 articles of the *Federal Reserve Bank of St. Louis Review*. They were able to replicate 9 articles (7.7%).
- Chang & Li (2015) successfully replicated 29 of 59 papers (49%) from seven journals ***with support from the authors.***

→...often, economic research is not replicable.

2. Journals' data policies and their effective enforcement in economic sciences

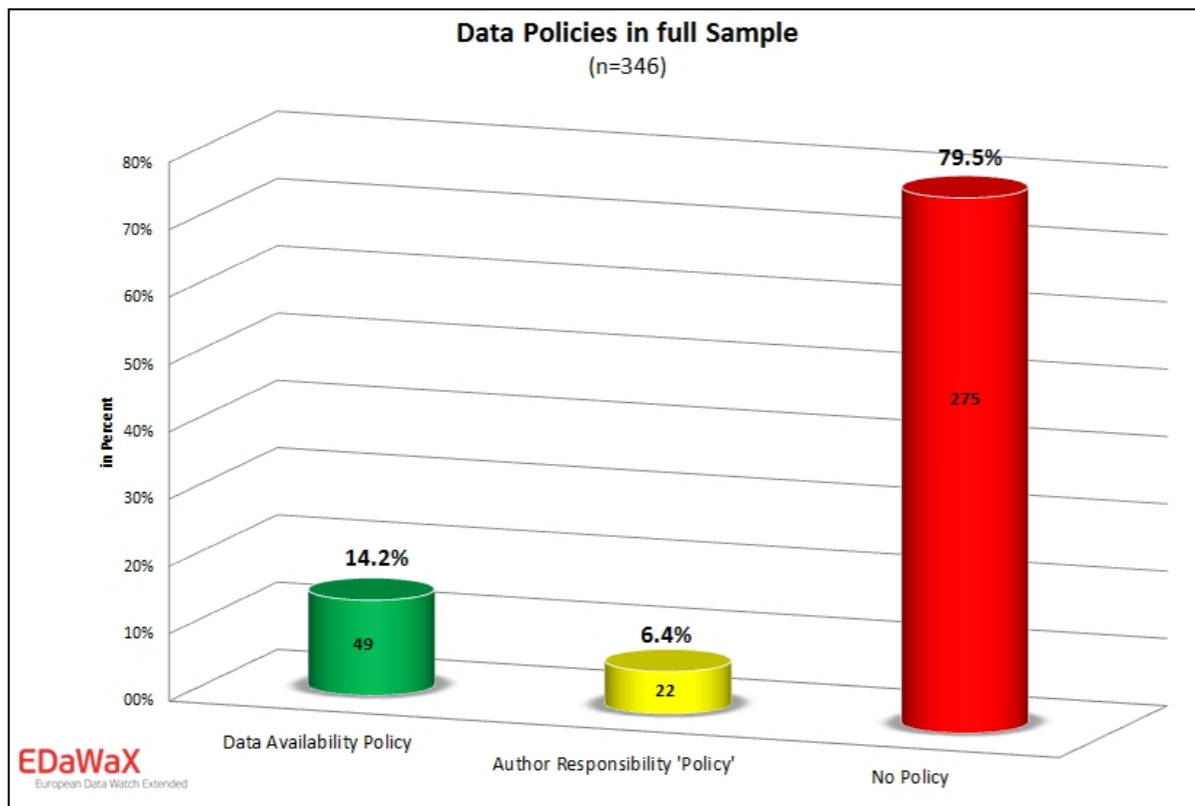
'The dog ate it' by Andy Scherer on flickr.com.
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“The economics profession has made some attempt to require researchers to make their data available to others, in part because replication would seem to be a useful check on research - and in part because of studies showing that economists had a habit of having their data immediately eaten by their dogs upon publication of their articles.”

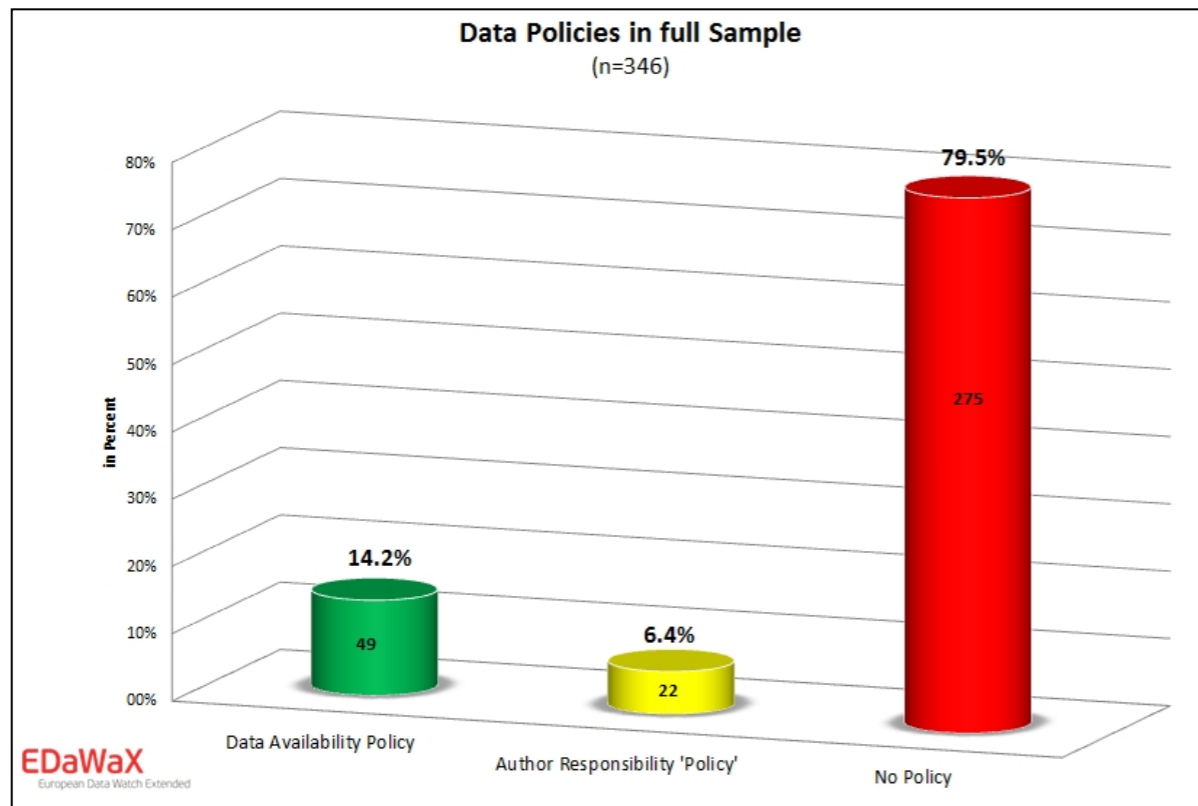
(Liebowitz, 2007)

2.1 Data policies of economic journals on the rise



In 2014, 14.2% of 346 economic journals (many of them listed in the JCR) had a DAP.

Data policies of economic journals on the rise



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New Avenues for Electronic Publishing in the Age of Infinite Collections and Citizen Science
B. Schmidt and M. Dobrevá (Eds.)
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doi:10.3233/978-1-61499-562-3-145

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Data Policies and Data Archives: A New Paradigm for Academic Publishing in Economic Sciences?

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Abstract. In our paper we summarise the findings of an empirical study in which a sample of 346 journals in economics and business studies were examined. We regard both the extent and the quality of journals' data policies, which should facilitate replications of published empirical research. The paper presents some characteristics of journals equipped with data policies and gives some recommendations for suitable data policies in economics and business sciences journals. In addition, we also evaluate the journals' data archives to roughly estimate whether these journals really enforce data availability. Our key finding is that we are currently not able to determine a new publishing paradigm for journals in economic sciences.

Keywords: Reproducibility, replication, economics, business studies, social sciences, academic publishing, data policies, data archives.

For details: Vlaeminck & Herrmann (2015). Data Policies and Data Archives: A New Paradigm for Academic Publishing in Economic Sciences?

doi:10.3233/978-1-61499-562-3-145

2.2 Do journals enforce their data policies?

'It's good to be reminded where reality is' by Simon Barron on flickr.com. License: CC-BY-NC 2.0



“If the empirical basis for an article cannot be reproduced, of what use to the discipline are its conclusions? What purpose does an article like this serve?”

(King, 1995)

A study on journals' compliance with their data policies

Starting position:

- More and more journals in economics and management start to implement data policies (though the overall share is still comparatively low).
- Nevertheless, replication studies still report difficulties in reproducing published findings (e.g. Chang & Li, 2015).
- Most journals hold mandatory data policies, but a considerable part of journals only have voluntary data policies.

Research questions:

- How much do journals enforce their data policies?
 - Do voluntary data policies work?
-

Methodology of the two-stage study:

For gaining an overview (n=599):

- Sample: 39 journals with a Data Availability Policy (Issues 1/2013 & 1/2014 - in total 599 articles).
- First, we determined the share of empirical /,data-based‘ articles -> (75.5%)
- For each empirical article we checked which replication files are available (-> datasets / program code / descriptions / references on datasets).

In-depth study (n=245):

- Sample: 17 out of the 39 journals, same issues, 245 articles in sample.
- Determination of article’s publication history (if available) AND the date the respective data policy became effective.
- Comparison of the replication files we found to the requirements of journal’s data policy (results in journal’s individual ‘compliance rate’).

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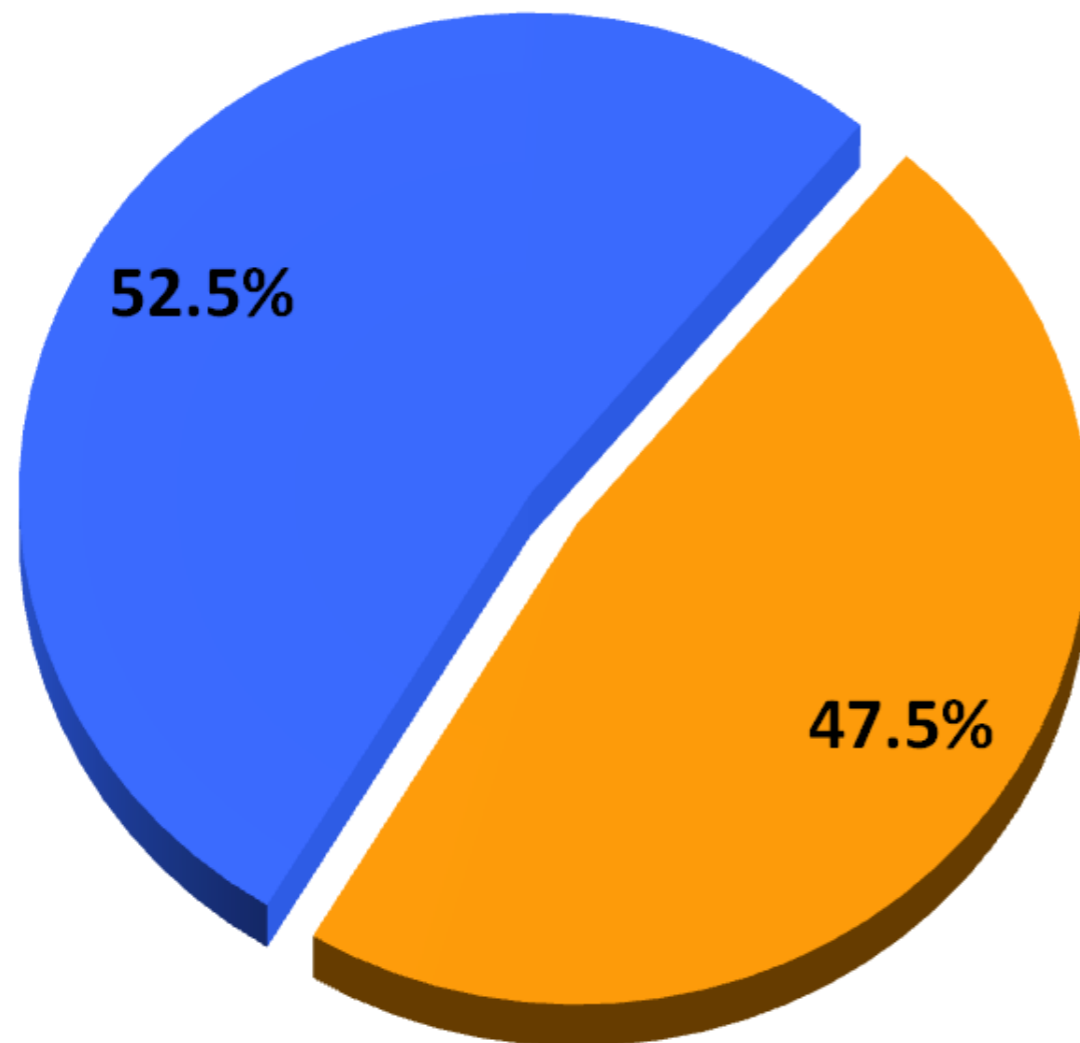
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Findings (I): Overall compliance rate (article level)

(n=240*)



- The majority of all ‘data-based’ articles investigated are not compliant with the requirements of journals’ data policy (52.5%).
- Apparently, by far not all journals in our sample do enforce their data availability policy.

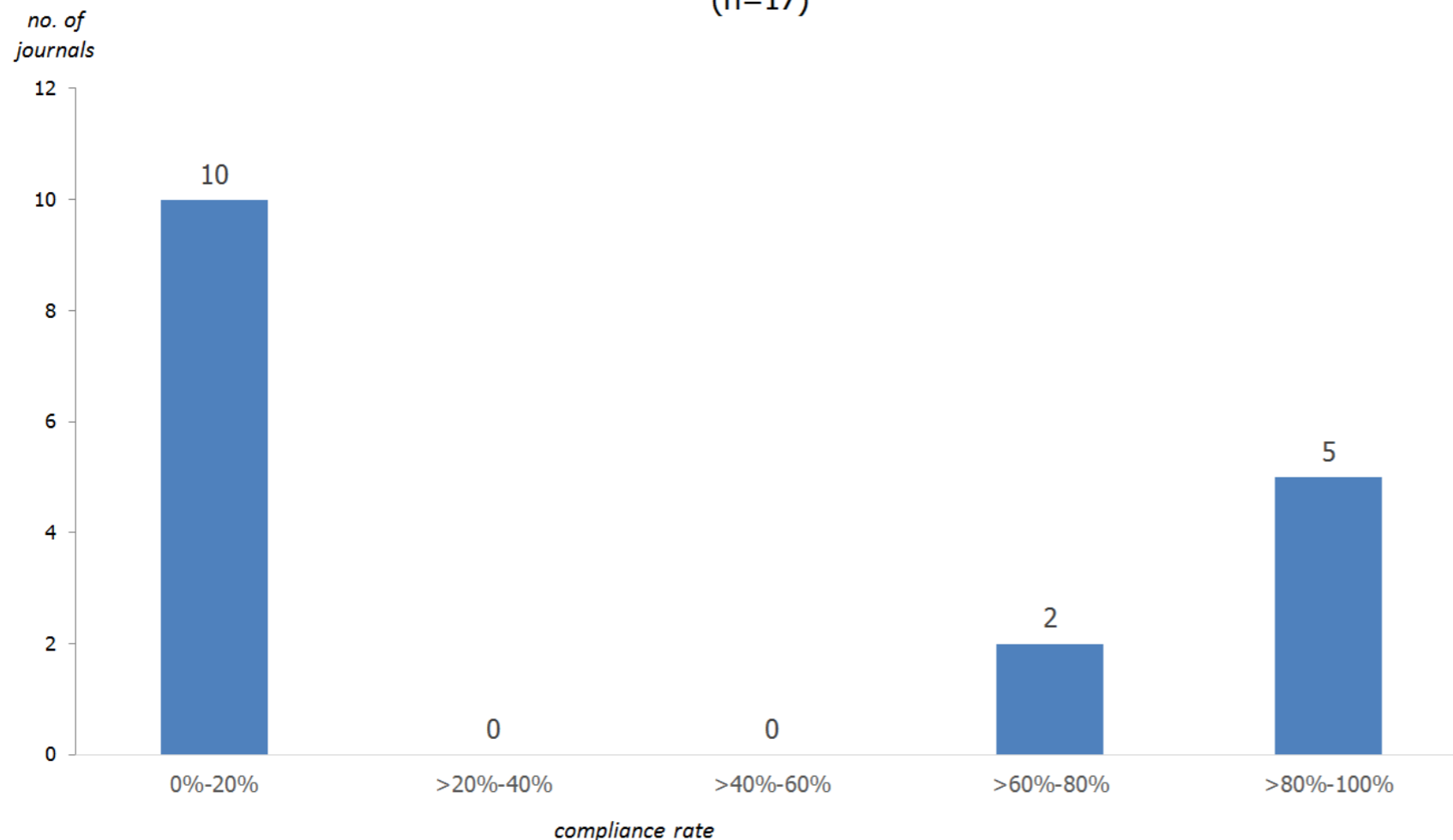
■ Data Policy satisfied ■ Data Policy NOT satisfied

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid policy satisfied	114	46,5	47,5	47,5
Valid policy not satisfied	126	51,4	52,5	100,0
Total	240	98,0	100,0	
Missing	99	5	2,0	
Total	245	100,0		

* Due to data policies’ specifications, 5 articles were removed from the sample.

Findings (II): Compliance rates on journal level

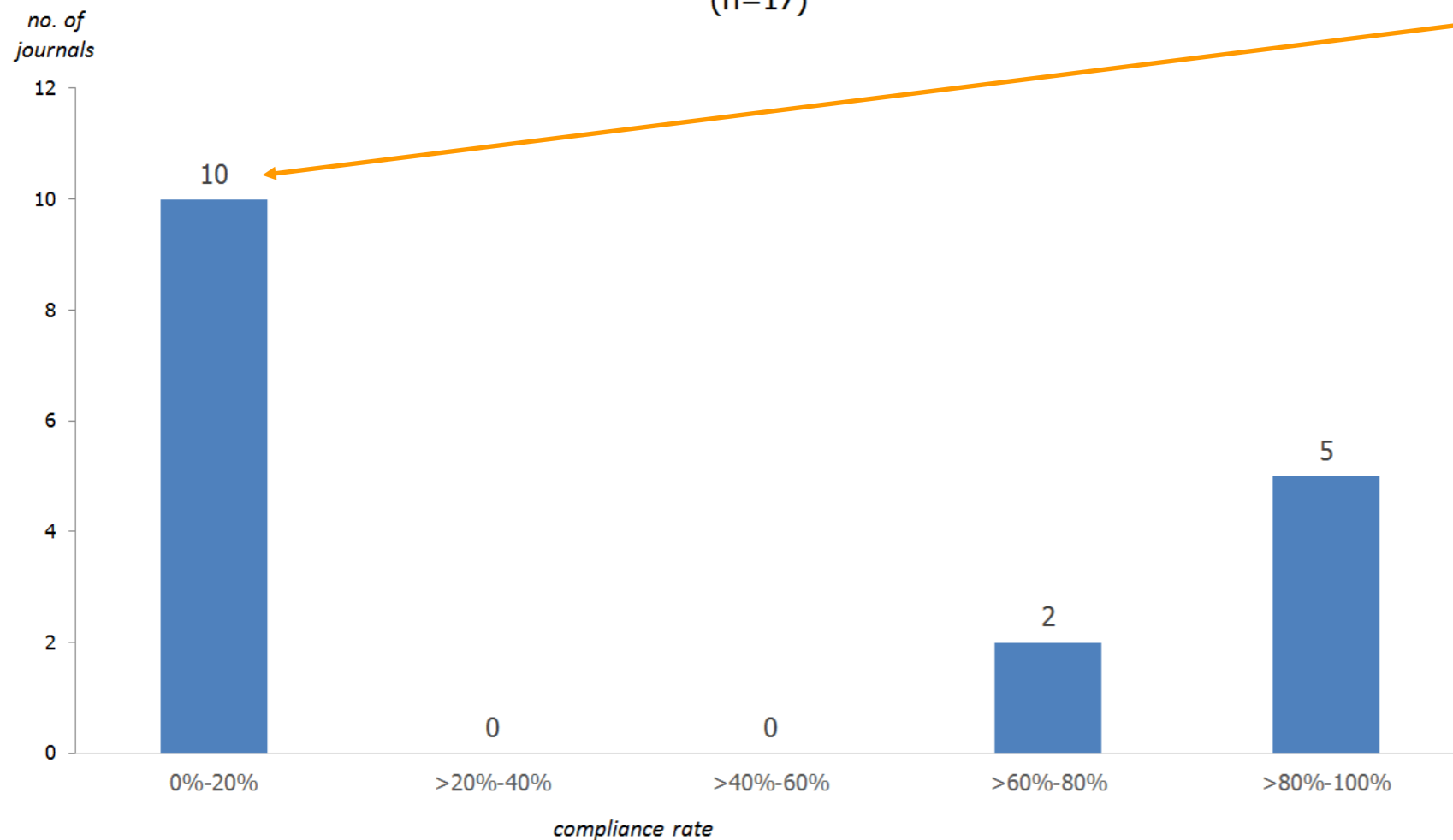
Average compliance rate of 17 economic journals with their data availability policy
(n=17)



- The majority of journals in our sample more or less ignore the requirements of their data policies.
- Almost 30% of all journals achieve high compliance rates with their data policy.
- Apparently, journals do either enforce their data policy, or ignore it.

Findings (II): Compliance rates on journal level

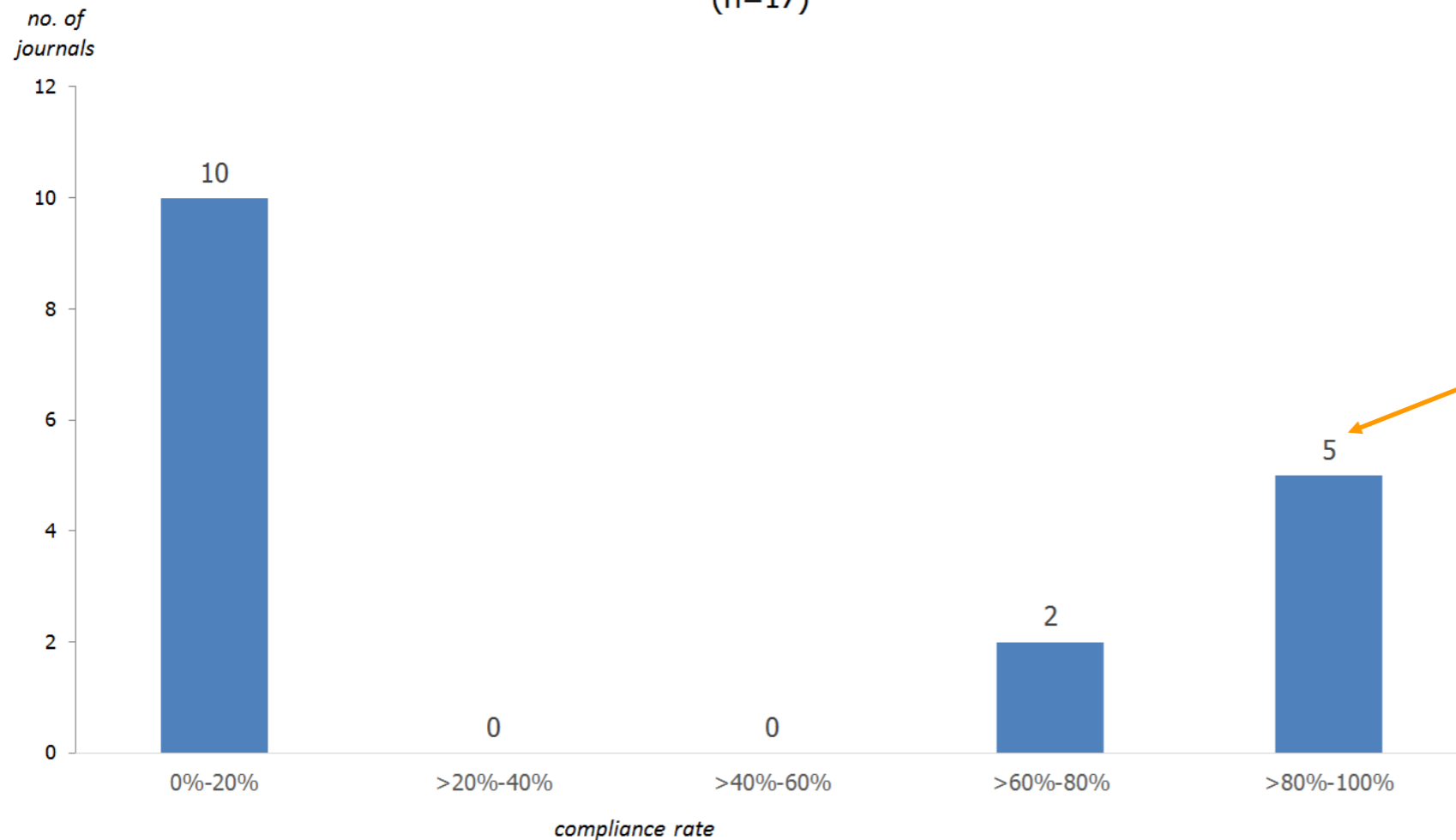
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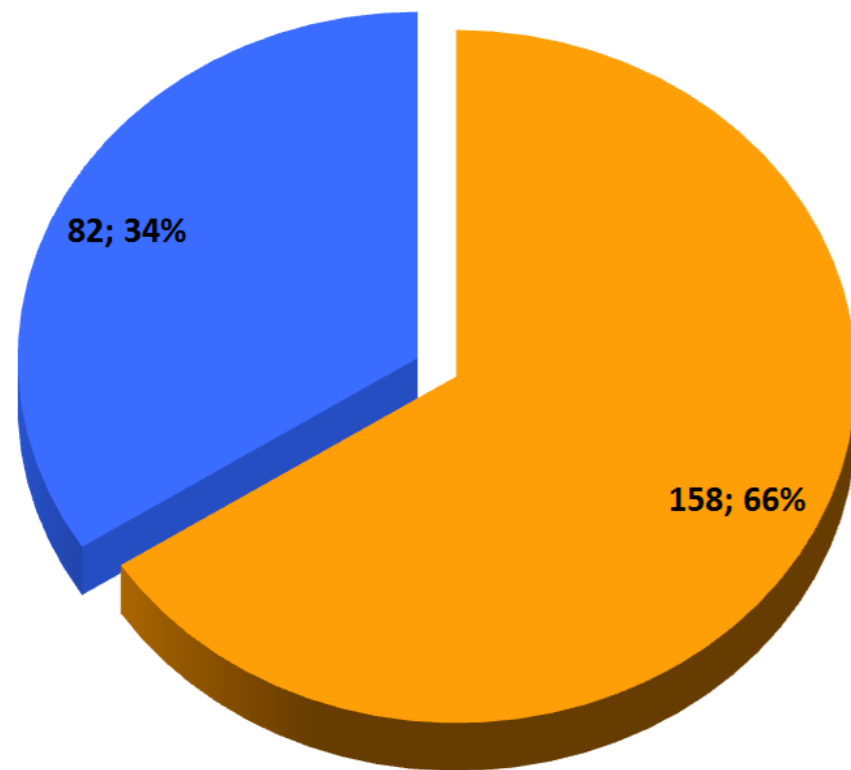
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Findings (III): Compliance rates for articles in journals with mandatory / voluntary data policies

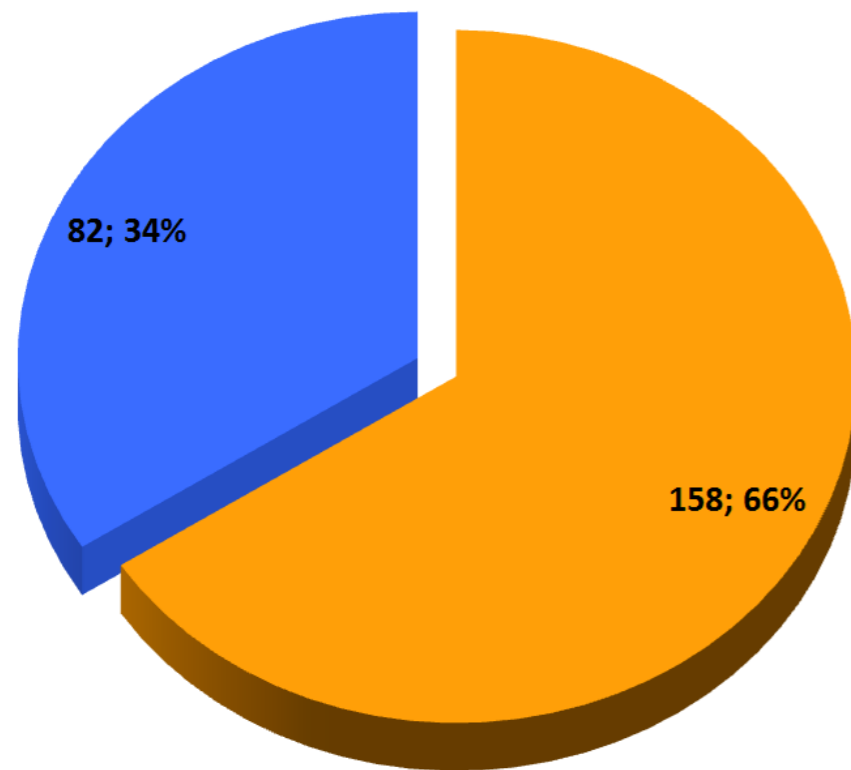
Share of articles under
voluntary /mandatory DAP
(n=240)



■ Articles under mandatory DAPs ■ Articles under voluntary DAPs

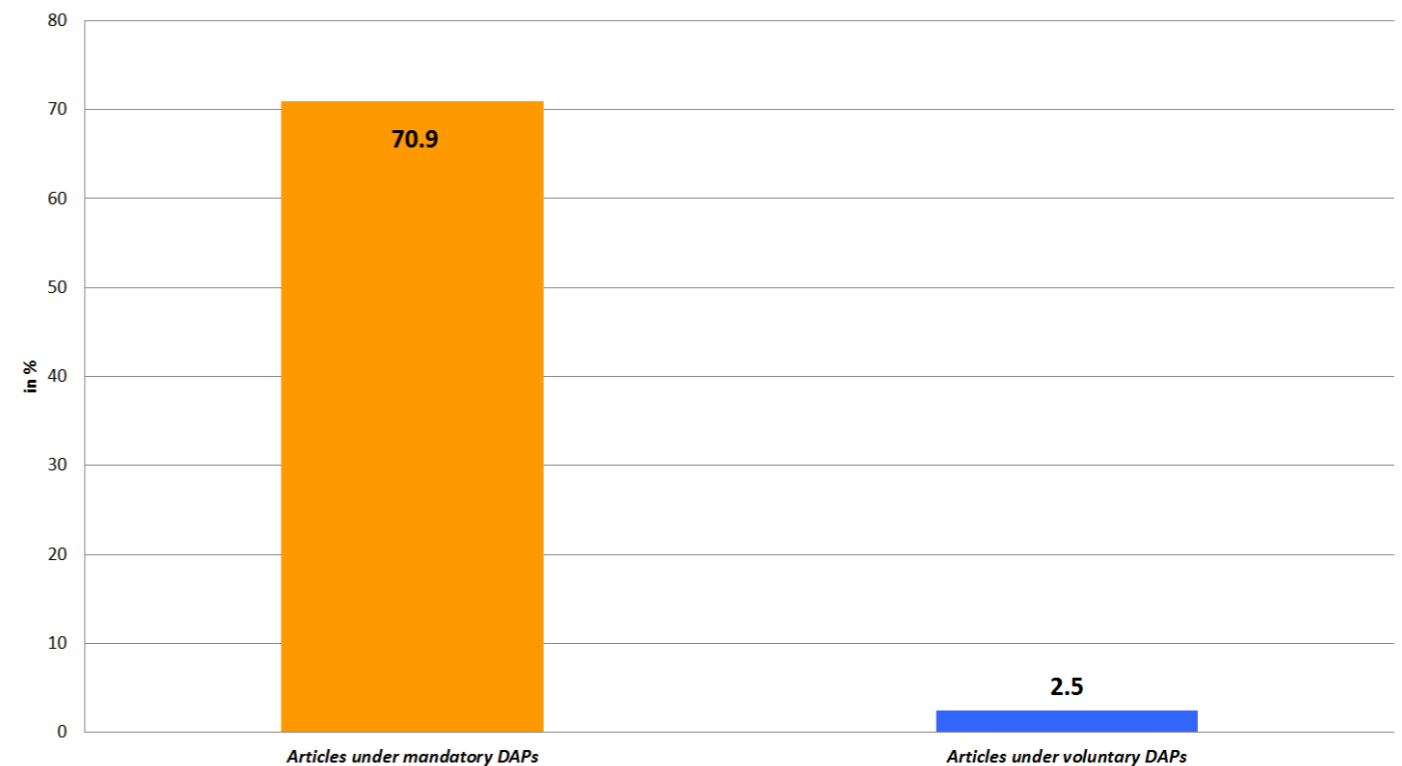
Findings (III): Compliance rates for articles in journals with mandatory / voluntary data policies

Share of articles under voluntary /mandatory DAP
(n=240)



■ Articles under mandatory DAPs ■ Articles under voluntary DAPs

Compliance rates of articles published under mandatory or voluntary data policies
(n=240)



Apparently, voluntary data policies do not work!

2.3 Take home messages:

- The share of journals with data availability policies in economics and management is on the rise, though the overall share is still comparatively low.
- Even those journals with a DAP enforce their data policies to varying degrees: While some strictly put their policy into practice, others seem to pay lip-service towards reproducible research.
- Our study on journals in economic sciences also suggests that voluntary data policies do not work in practice.

3. Journals as publication outlets for replication studies

“In statistical and other numerical work presented in Econometrica the original raw data will, as a rule, be published, unless their volume is excessive. This is important in order to stimulate criticism, control, and further studies.”

Frisch, Ragnar (1933). Editorial, Econometrica, I, pp. 1-4

3.1 Replications published in economic journals

Figure 1. Histogram of replication studies by year for our sample of 162 articles

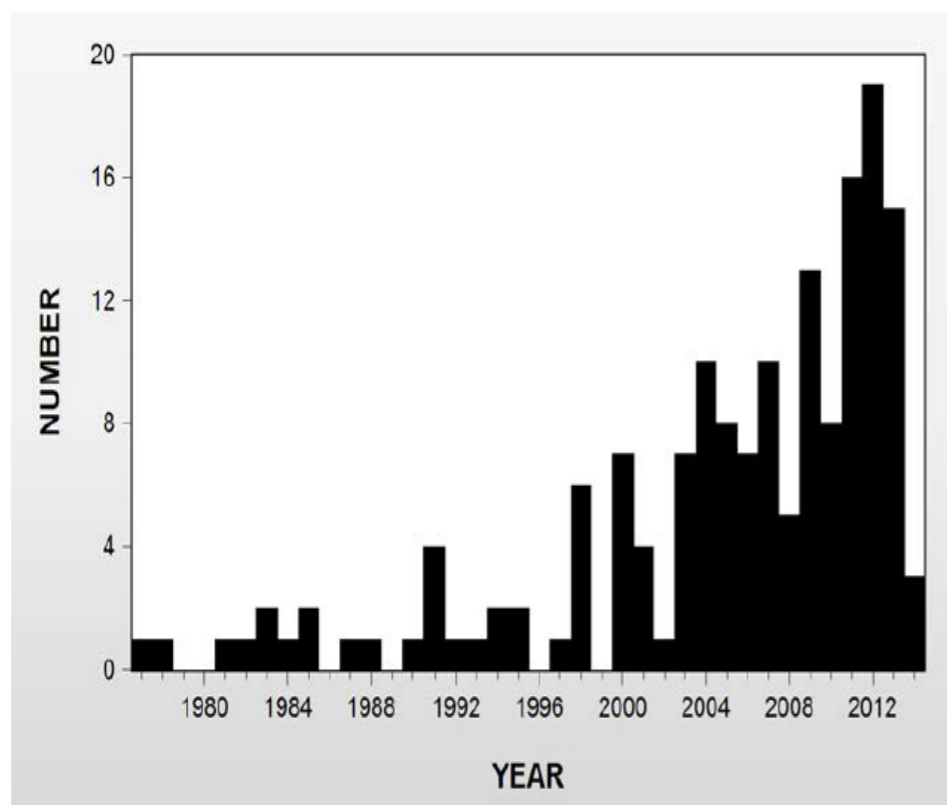


TABLE 3. Distribution of replications across journals

Journal	Frequency Pct. (Number)	Cumulative Pct.
<i>Journal of Applied Econometrics</i>	19.1 (31)	19.1
<i>Journal of Human Resources</i>	11.7 (19)	30.9
<i>American Economic Review</i>	9.3 (15)	40.1
<i>Econ Journal Watch</i>	6.8 (11)	46.9
<i>Journal of Development Studies</i>	6.2 (10)	53.1
<i>Experimental Economics</i>	5.6 (9)	58.6
<i>Applied Economics</i>	4.3 (7)	63.0
<i>Empirical Economics</i>	4.3 (7)	67.3
<i>Journal of Economic and Social Measurement</i>	3.7 (6)	71.0
<i>Public Choice</i>	3.7 (6)	74.7
<i>Journal of Political Economy</i>	1.9 (3)	76.5
<i>Labour Economics</i>	1.9 (3)	78.4
<i>Economic Inquiry</i>	1.2 (2)	79.6
<i>Journal of Environmental Economics and Management</i>	1.2 (2)	80.9
<i>Quarterly Journal of Economics</i>	1.2 (2)	82.1
<i>Review of International Organizations</i>	1.2 (2)	83.3

Maren Duvendack, Richard W. Palmer-Jones & Robert Reed (2015). Replications in Economics: A Progress Report. *Econ Journal Watch* 12(2), pp. 164-191

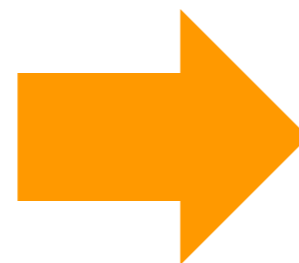
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<i>American Economic Journal: Applied Economics</i>	0.6 (1)	84.0
<i>American Law and Economics Review</i>	0.6 (1)	84.6
<i>Applied Financial Economics</i>	0.6 (1)	85.2
<i>Conflict Management and Peace Science</i>	0.6 (1)	85.8
<i>Econometrica</i>	0.6 (1)	86.4
<i>Economic Journal</i>	0.6 (1)	87.0
<i>European Economic Review</i>	0.6 (1)	87.7
<i>Health Economics</i>	0.6 (1)	88.3
<i>International Economics and Economic Policy</i>	0.6 (1)	88.9
<i>International Review of Applied Economics</i>	0.6 (1)	89.5
<i>Journal of Development Economics</i>	0.6 (1)	90.1
<i>Journal of Development Effectiveness</i>	0.6 (1)	90.7
<i>Journal of International Development</i>	0.6 (1)	91.4
<i>Journal of International Trade & Economic Development</i>	0.6 (1)	92.0
<i>Journal of Law and Economics</i>	0.6 (1)	92.6
<i>Journal of Money, Credit, and Banking</i>	0.6 (1)	93.2
<i>Journal of the European Economic Association</i>	0.6 (1)	93.8
<i>Journal of Urban Economics</i>	0.6 (1)	94.4
<i>Marketing Letters</i>	0.6 (1)	95.1
<i>Proceedings of the National Academy of Sciences</i>	0.6 (1)	95.7
<i>Public Finance Review</i>	0.6 (1)	96.3
<i>Quarterly Journal of Business and Economics</i>	0.6 (1)	96.9
<i>Review of Austrian Economics</i>	0.6 (1)	97.5
<i>Review of Economics and Statistics</i>	0.6 (1)	98.1
<i>Review of Financial Studies</i>	0.6 (1)	98.8
<i>Social Science & Medicine</i>	0.6 (1)	99.4
<i>World Development</i>	0.6 (1)	100.0

- Journal of Applied Econometrics accounts for about one-fifth (19.1%) of all replication studies
- Six journals account for almost 60% (58.7%)
- Only ten journals have ever published more than three replication studies

Maren Duvendack, Richard W. Palmer-Jones & Robert Reed (2015). Replications in Economics: A Progress Report. *Econ Journal Watch* 12(2), pp. 164-191



„There is a structural lack of interest in replication“ (Hamermesh 2007:9)

Hamermesh, Daniel S. (2007). Replication in Economics. NBER Working Paper No. 13026. doi: 10.3386/w13026

3.2 Replication section

- Increase the visibility of replications
- Promote new replications by greater incentives for researchers
- Journals have a great emphasis on novelty
- Journal's impact factor potentially declines
- Citing replications alongside the original article

cf. Anne-Wil Harzing (2016). Why replication studies are essential: learning from failure and success, *Cross Cultural & Strategic Management*, 23(4), pp.563-568, <https://doi.org/10.1108/CCSM-07-2016-0133> ;

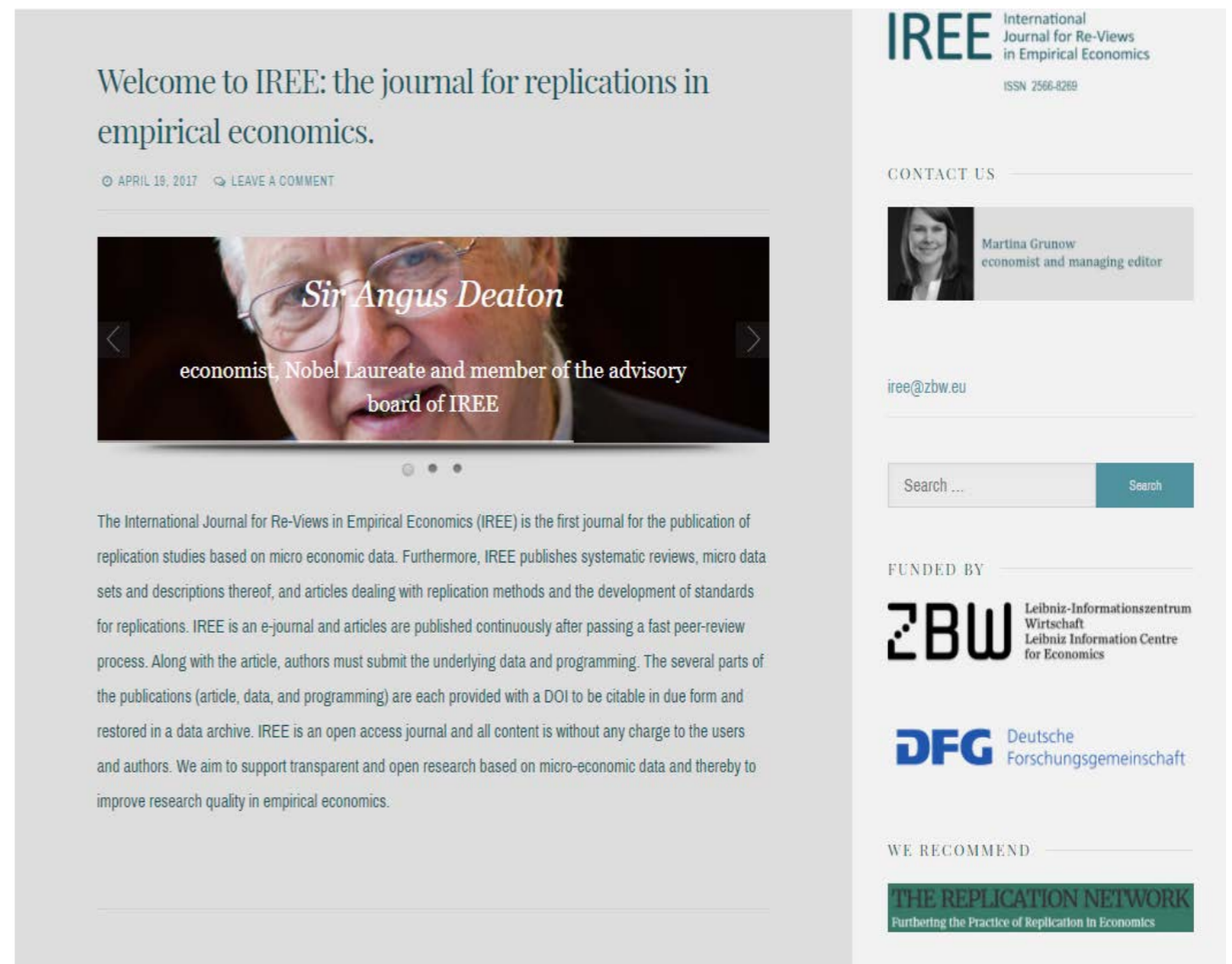
Lucas Coffman, Muriel Niederle & Alistar J. Wilson (2017). Replications: A Proposal to Increase their visibility and Promote them, <https://www.aeaweb.org/conference/2017/preliminary/2100?page=9&per-page=50>

The screenshot shows the 'Economics' journal website. The top navigation bar includes 'ARTICLES', 'DISCUSSION PAPERS', 'SPECIAL AREAS', and 'ABOUT'. The 'Replications' section is highlighted, with a sub-header 'Replications' and a paragraph explaining its importance. Below this, there are sections for 'Articles' and 'Discussion Papers', each listing recent publications with their titles, authors, and dates. The 'Articles' section lists a replication of a paper by Stan J. Liebowitz. The 'Discussion Papers' section lists two papers: one by Mantobaye Moundigbaye et al. and another by John C. Whitehead. The bottom of the page has a dark navigation bar with links for 'HOME', 'LEGAL', 'CONTACT & SUGGESTIONS', and 'ALERTING SERVICE'.

<http://www.economics-ejournal.org/special-areas/replications>

3.3 Replication journal

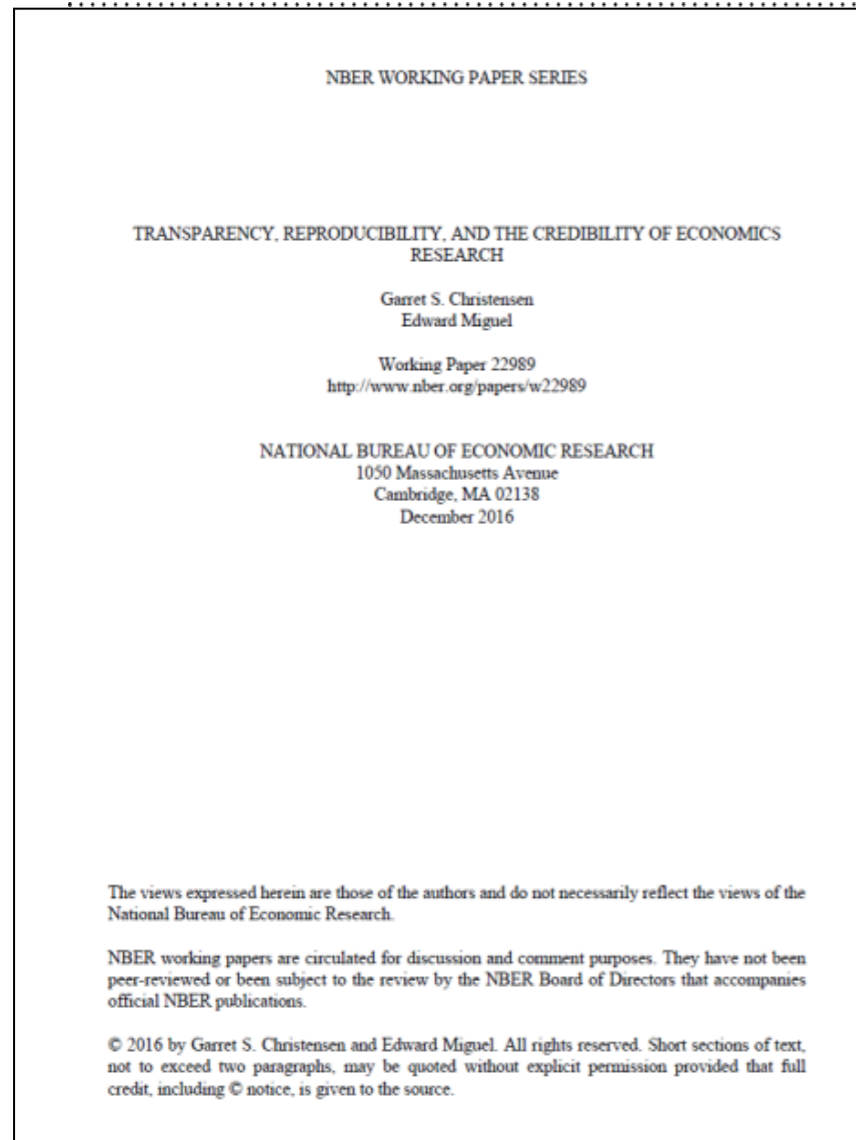
- IREE is a journal dedicated to the publication of replication studies (positive and negative replications)
- Furthermore, IREE publishes descriptions of data(sets)
- Open Access; no publication or submission fees; peer-reviewed
- Data sets are stored in a permanent repository
- Each article, data set, and code is assigned with a DOI



The screenshot shows the homepage of the International Journal for Re-Views in Empirical Economics (IREE). The main heading reads "Welcome to IREE: the journal for replications in empirical economics." Below this, there is a date "APRIL 18, 2017" and a "LEAVE A COMMENT" link. A featured image of Sir Angus Deaton is shown with the text "Sir Angus Deaton" and "economist, Nobel Laureate and member of the advisory board of IREE". The main text describes the journal's focus on replication studies, systematic reviews, and micro data sets, and mentions that it is an open access journal. The right sidebar contains the IREE logo, contact information for Martina Grunow, a search bar, and logos for funding organizations ZBW and DFG. A "WE RECOMMEND" section features "THE REPLICATION NETWORK".

<https://www.iree.eu>

3.3 Conclusion



„The rising interest in transparency and reproducibility in economics reflects broader global trends regarding these issues, both among academics and beyond. As such, we argue that ‚this time‘ really may be different than earlier bursts of interest in research transparency within economics (...) that later lost momentum and mostly died down.“

(Christensen & Miguel 2016, p. 61)

Christensen, Garret S. & Edward Miguel (2016). Transparency, Reproducibility, And The Credibility of Economics Research. NBER Working Paper 22989: <http://www.nber.org/papers/w22989>

Thank you for your attention!

...do you have questions or comments ?

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Sven Vlaeminck - s.vlaeminck@zbw.eu - www.edawax.de

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