European Research Council
Established by the European Commission

Open Access Measurement at ERC

Preliminary Figures

Workshop on Impact and Measurement of Open Access (Oslo, 2017)

Antonio Perianes-Rodríguez
ERC Executive Agency
antonio.perianes-rodriguez@ec.europa.eu
Unit A1 – Support to the Scientific Council
Oslo, 14th February 2017

European Commission
Horizon 2020
European Union funding
for Research & Innovation

Open Access Measurement at ERC

Figures on Productivity, Visibility, Influence and Excellence

Introduction

- The **citation advantage of OA**[1]: papers openly available are more cited.
- Sceptics argue that this advantage is due to citations having a chance to **arrive sooner**. Another artefact would be a **selection bias**.
- Limitations of literature[2,3]: **small** samples, limited **diversity** of sources, and **short** windows.

Objectives

- The main objective is to **quantify** the current situation concerning Gold OA in the macro, meso and micro levels:
  - Fields.
  - Regions and Countries.
  - Journals.
  - Institutions.
  - All publications.
- Also to contribute to answer if the **hypothesis** of the citation advantage of OA publications is correct.

Data and Method

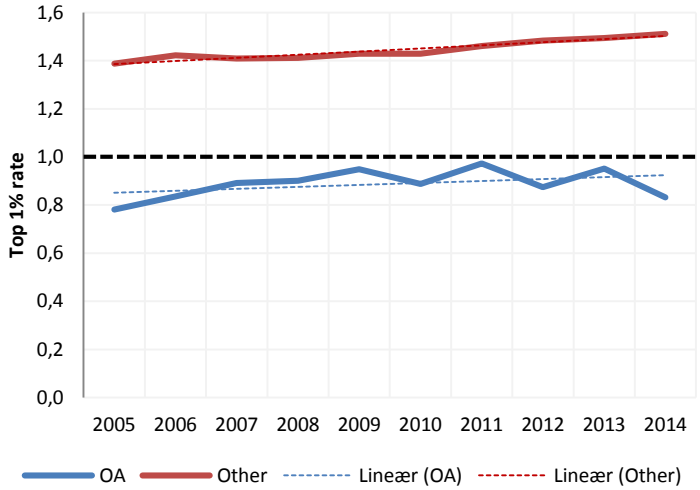
Database: **Scopus**. Publication window selected: **2005-2014**.

Size dependent	Size independent
Total number of publications	% Publications
Total number of citations received	% Citations Normalised citation
Total number of highly cited publications (top 1%)	% top 1 publications Relative ratio of top 1

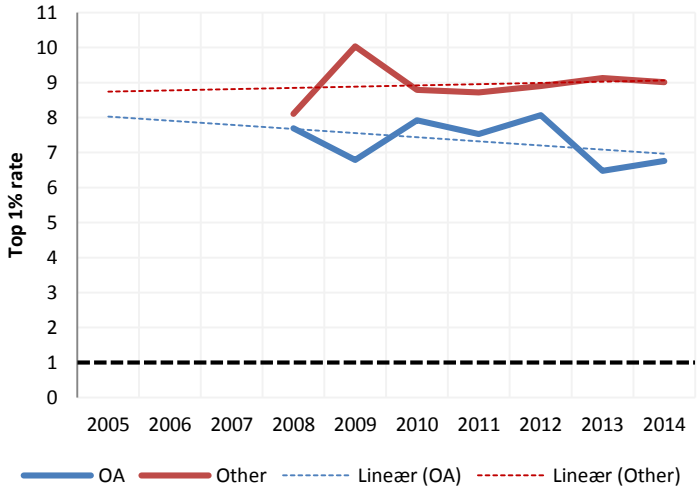
OA (**=Gold**) includes the journals listed as *Open Sources* by Scopus.

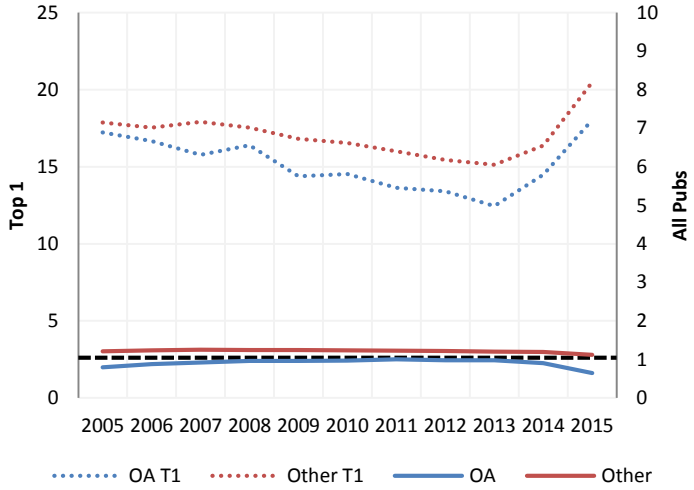
Reported publications are included in the reports of ERC grantees.

Results. All publications

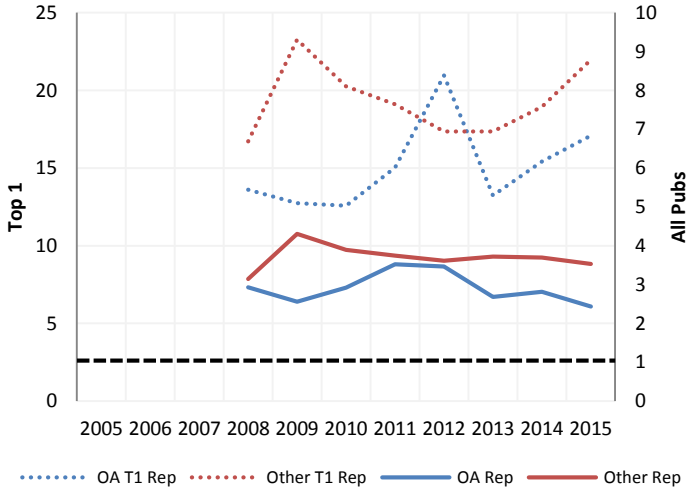


Rate of excellence





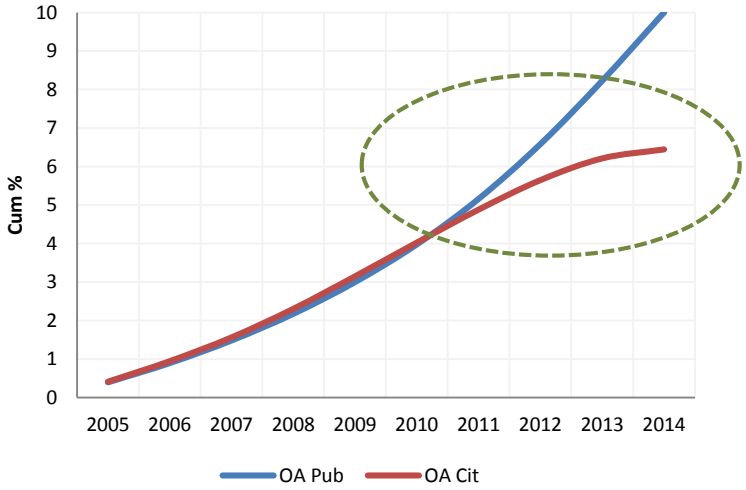
Normalised citation



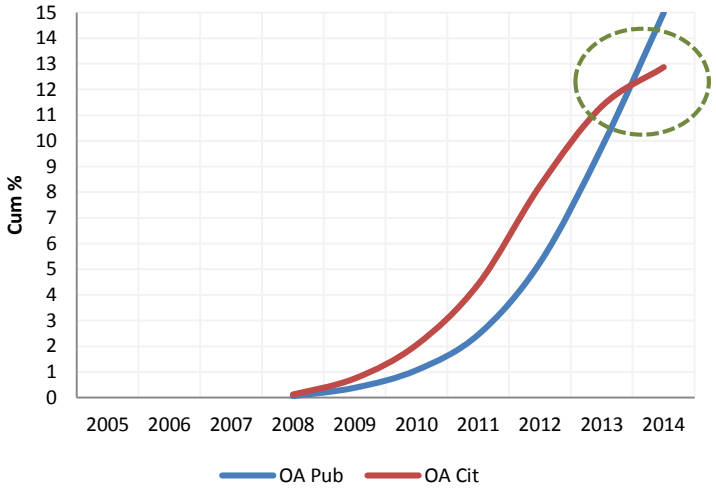
Scopus

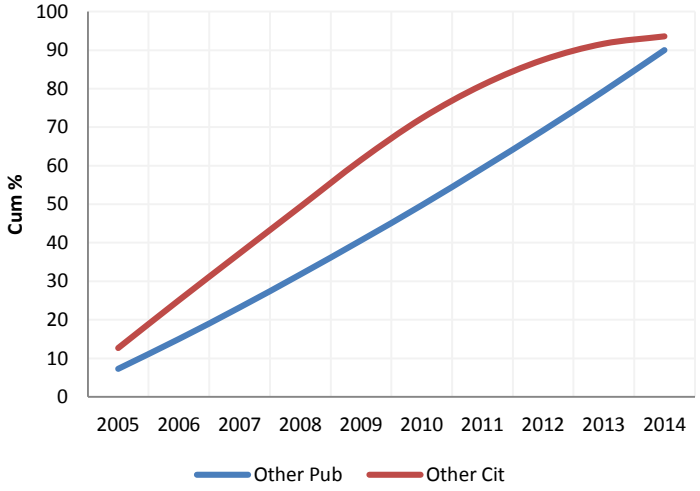
ERC Reported

Results. All publications

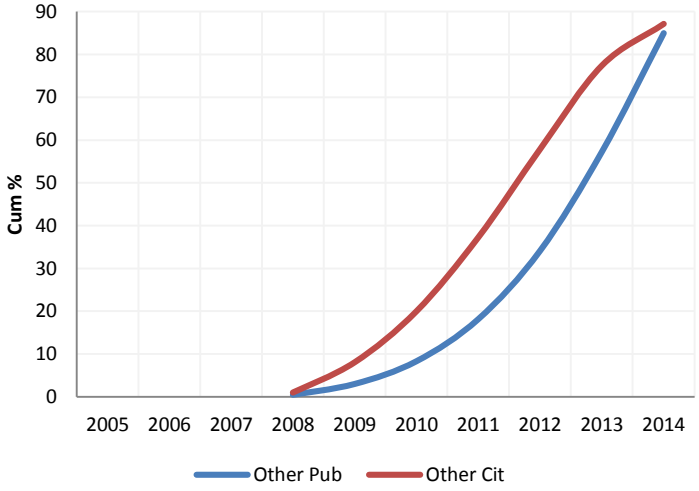


Open Sources





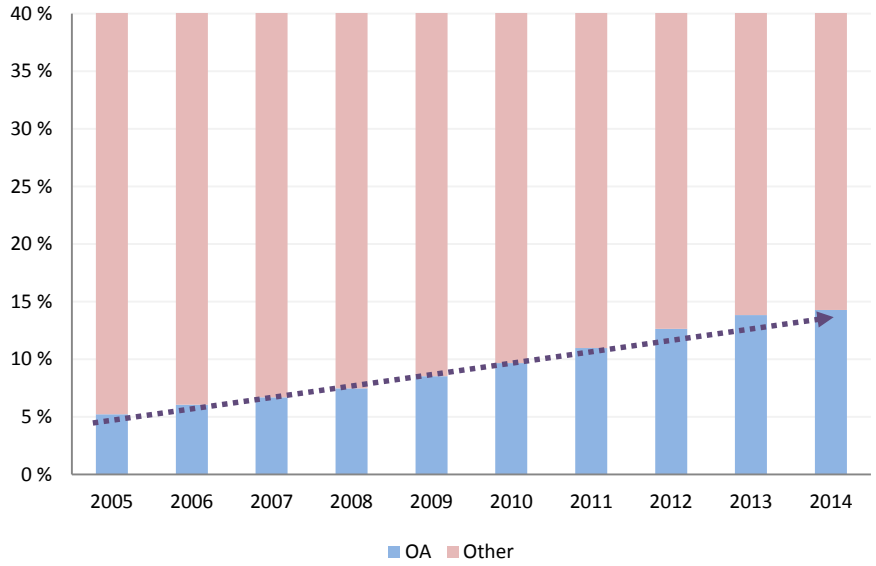
Other Sources



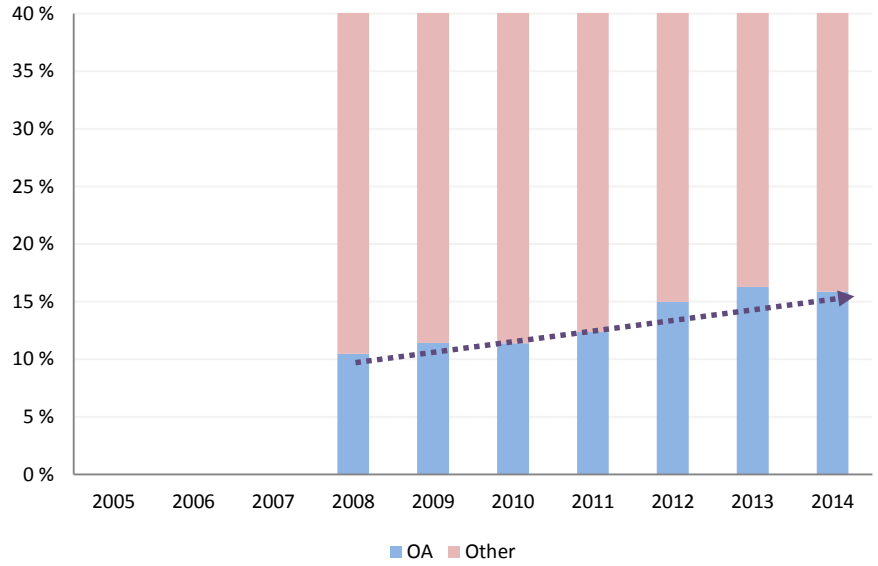
Scopus

ERC Reported

Results. All publications



Publications rate



Scopus

ERC Reported

Results. All publications

SCOPUS 2005-2014					
	Publications	% Publications	Top 1	% Top 1	Relative Top 1
OA	1808952	10.0	16204	0.9	0.1
Other	16282983	90.0	235794	1.4	1.3
Total	18091935		251998	1.4	

ERC REPORTED PUBLICATIONS 2005-2014					
	Publications	% Publications	Top 1	% Top 1	Relative Top 1
OA	7470	15.0	526	7.0	1.1
Other	42351	85.0	3812	9.0	7.6
Total	49821		4338	8.7	

Table 1. Publications, highly cited publications, % publications and Top 1, and relative Top 1

Results. Fields

Fields	% Pub OA	% Pub Other	% Cit OA	% Cit Other
Multidisciplinary	10.7	89.3	1.7	98.3
Agricultural and Biological Sciences	18.8	81.2	13.4	86.6
Arts and Humanities	6.4	93.6	2.8	97.2
Biochemistry Genetics and Molecular Biology	15.3	84.7	10.1	89.9
Business Management and Accounting	3.3	96.7	1.0	99.0
Chemical Engineering	5.1	94.9	1.7	98.3
Chemistry	6.3	93.7	3.1	96.9
Computer Science	8.1	91.9	5.3	94.7
Decision Sciences	3.9	96.1	1.7	98.3
Earth and Planetary Sciences	8.2	91.8	5.4	94.6
Economics Econometrics and Finance	3.9	96.1	0.8	99.2
Energy	3.5	96.5	1.3	98.7
Engineering	4.5	95.5	2.1	97.9
Environmental Science	8.4	91.6	5.1	94.9
Immunology and Microbiology	10.4	89.6	9.0	91.0
Materials Science	5.1	94.9	1.3	98.7
Mathematics	9.6	90.4	6.9	93.1
Medicine	13.1	86.9	8.8	91.2
Neuroscience	9.7	90.3	5.9	94.1
Nursing	5.5	94.5	5.0	95.0
Pharmacology Toxicology and Pharmaceutics	9.6	90.4	4.6	95.4
Physics and Astronomy	10.0	90.0	6.7	93.3
Psychology	5.7	94.3	1.9	98.1
Social Sciences	8.4	91.6	4.1	95.9
Veterinary	18.0	82.0	10.9	89.1
Dentistry	15.0	85.0	8.1	91.9
Health Professions	7.2	92.8	5.4	94.6

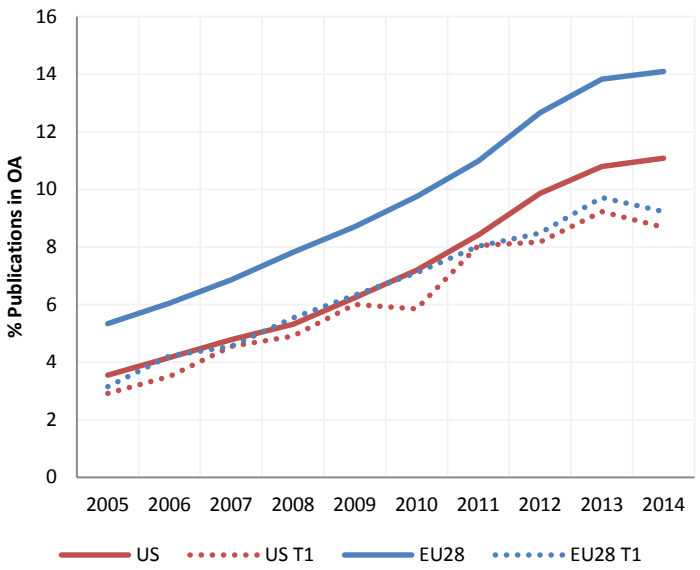
Table 2. % Publications and citations by SCIENTIFIC FIELDS. Scopus

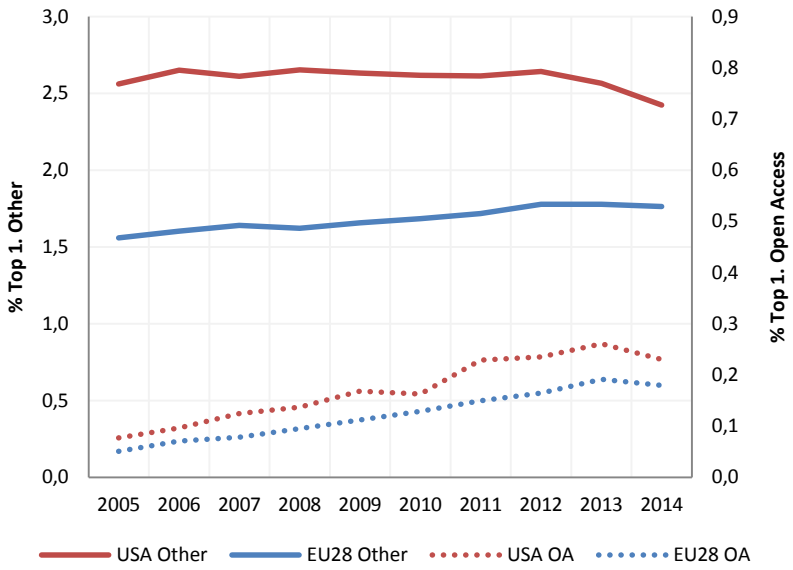
Results. Fields

	Scopus		ERC Reported	
Field	OA	Other	OA	Other
Multidisciplinary	0.2	1.9	1.1	12.4
Agricultural and Biological Sciences	1.7	1.2	7.0	10.0
Arts and Humanities	0.3	1.4	9.1	10.5
Biochemistry Genetics and Molecular Biology	2.2	2.1	8.7	11.0
Business Management and Accounting	0.2	1.4		2.9
Chemical Engineering	0.9	2.7	4.0	13.4
Chemistry	1.7	2.0	15.6	8.3
Computer Science	2.6	2.8	12.1	8.7
Decision Sciences	1.3	2.7	0.0	4.6
Earth and Planetary Sciences	1.1	1.4	7.3	10.4
Economics Econometrics and Finance	0.1	1.4		6.0
Energy	0.7	2.2		6.9
Engineering	1.2	2.2	7.4	14.2
Environmental Science	1.8	1.5	8.4	9.4
Immunology and Microbiology	1.7	1.9	11.5	12.4
Materials Science	0.5	2.0	6.3	10.6
Mathematics	2.0	1.4	8.7	3.3
Medicine	0.9	1.4	5.2	12.1
Neuroscience	1.9	1.9	8.0	9.2
Nursing	0.8	1.2	40.0	10.3
Pharmacology Toxicology and Pharmaceutics	0.6	1.2	5.3	7.3
Physics and Astronomy	1.5	1.7	8.9	9.2
Psychology	0.6	2.0	3.1	8.3
Social Sciences	0.8	1.4	4.5	8.0
Veterinary	0.4	1.2		15.6
Dentistry	0.3	1.4		
Health Professions	2.6	1.3		7.5

Table 3. Ratio of highly cited publications (% Top 1). Scopus and ERC Reported

Results. Regions

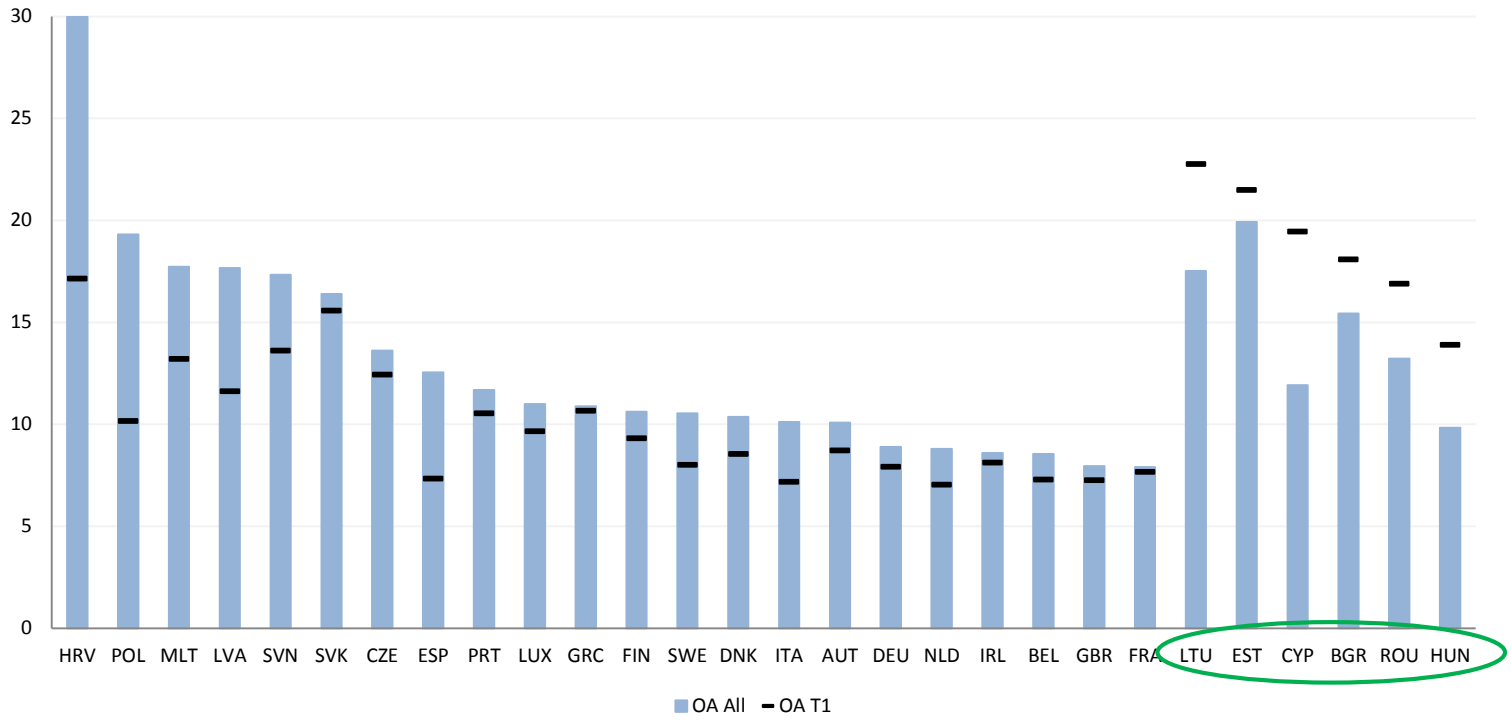




% publications in OA. Scopus

% Top 1. Scopus

Results. Countries



% publications and % Top 1 in OA. Scopus

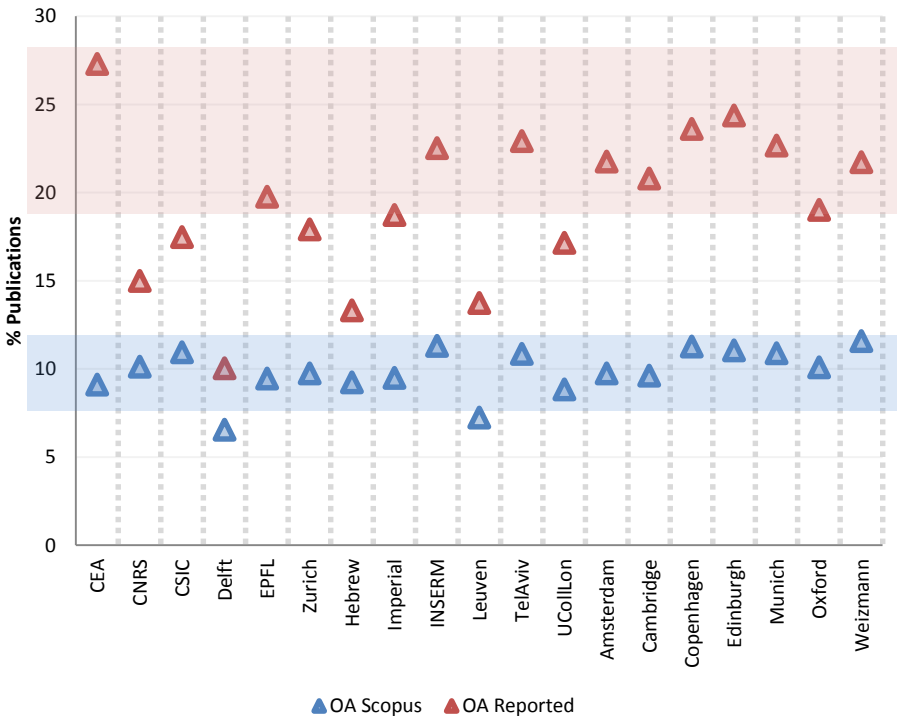
Results. Journals

Title	Pubs	Top 1	% Top1
PLoS ONE	131697	2316	1.8
Physical Review B	94338	1090	1.2
J. Biol. Chem.	84694	293	0.3
Applied Physics Letters	74612	1084	1.5
PNAS	63662	968	1.5
J. Applied Physics	62658	241	0.4
Physical Review Letters	60350	2935	4.9
J. Am. Chem. Society	51262	3164	6.2
BMJ	49597	610	1.2
J. Chem. Physics	46995	274	0.6
Astrophysical J.	46595	1684	3.6
Physical Review D	46493	1226	2.6
Nature	45294	1446	3.2
J. Geophys. Research E	45020	416	0.9
SAE Technical Papers	43417	2	0.0
Science	43197	1540	3.6
Physical Review A	39381	202	0.5
Acta Crystall Section E	39003	1	0.0
J. Physics: Conference Series	38820	8	0.0
Lancet	36983	1900	5.1

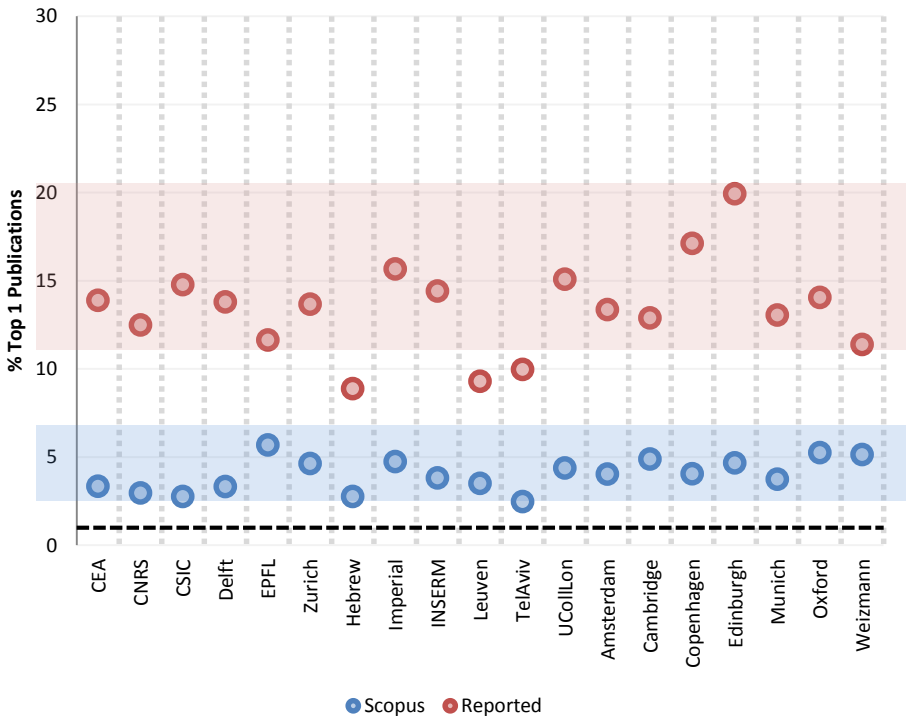
Title	Pubs	Top 1	% Top1
Nature Nanotechnology	2010	761	37.9
Chemical Society Reviews	3194	1201	37.6
Nature Materials	3138	1132	36.1
Energy and Environ. Sci.	2451	800	32.6
Chemical Reviews	3141	1003	31.9
ACS Nano	7832	2217	28.3
Nano Letters	10587	2858	27.0
Advanced Materials	11672	2708	23.2
IEEE Trans. Industrial Electron.	6109	1211	19.8
Nature Genetics	5557	1066	19.2
Cell	8519	1627	19.1
Biomaterials	11869	2101	17.7
Advanced Functional Materials	6412	963	15.0
Small	4619	685	14.8
IEEE Trans. Power Electron.	5186	720	13.9
Nature Communications	7515	898	11.9
Nature Medicine	8022	913	11.4
J. Clinical Investigation	8576	953	11.1
J. Clinical Oncology	17626	1896	10.8
Nature Biotechnology	7245	686	9.5

Table 4. Publications, highly cited publications and % highly cited publications by JOURNAL

Results. Institutions

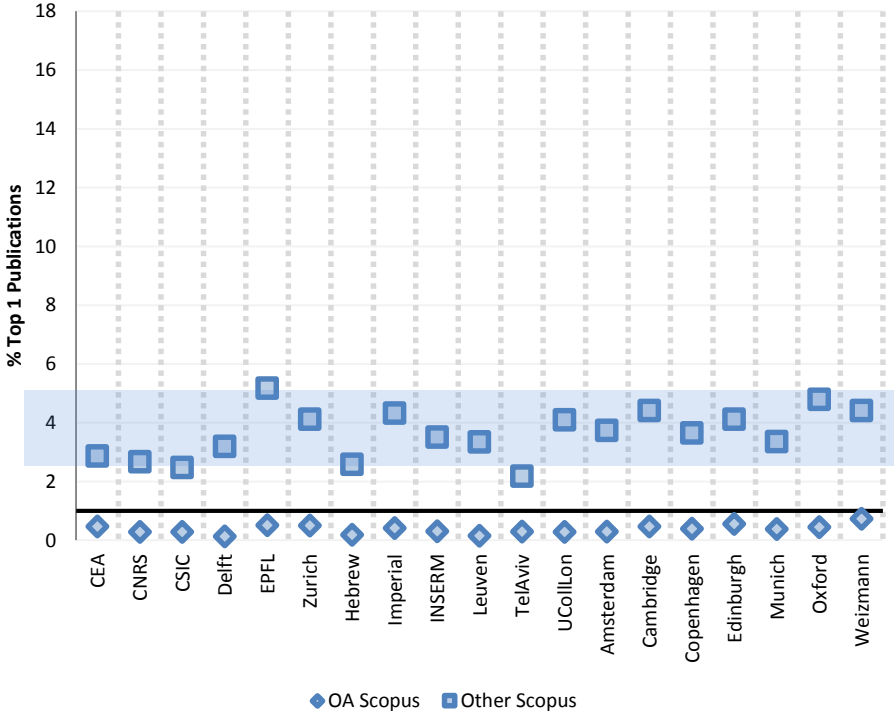


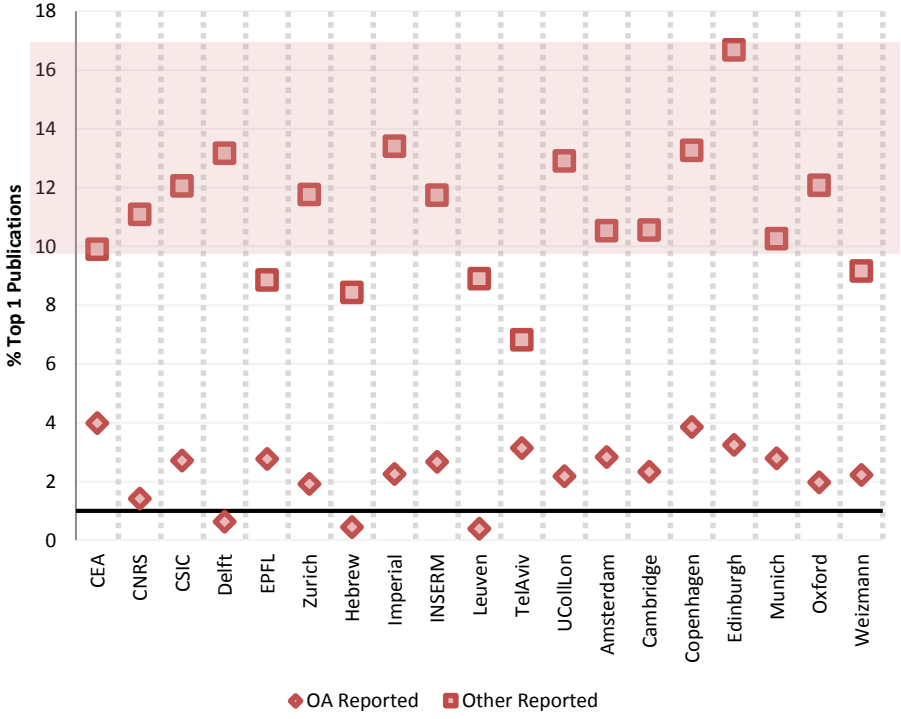
% publications in OA. Scopus and ERC



% Top 1 publications. Scopus and ERC

Results. Institutions





% publications in OA. Scopus

% Top 1 publications. ERC

Key findings

1) The proportion of Gold OA fluctuates between **10%** in Scopus and **20%** in institutions with ERC publications.

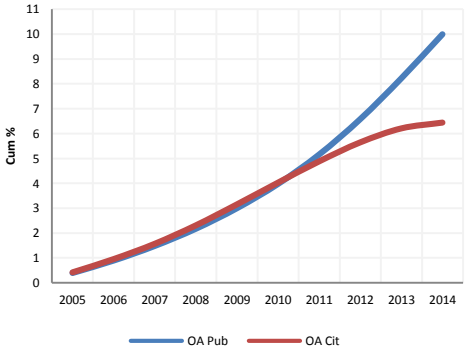
2) Gold OA **does not provide** significant advantages despite the steady growth in productivity.

3) There are some **exceptions**: 5 fields, 6 countries and few journals.

4) ERC publications provide an **incredible** excellence rate.

Discussion

- Our results confirm the findings of recent studies refuting the idea of OACA.
- The current **Gold OA paradox** is that an increasing number of publications fail to attract the interest of the scientific community.
- What is the role to be played by factors such as cost of publishing or peer-review to **reverse** this perception?
- Should quality control policies in Open Sources be **revised**?
- Should publication policies in traditional sources be **revised**?



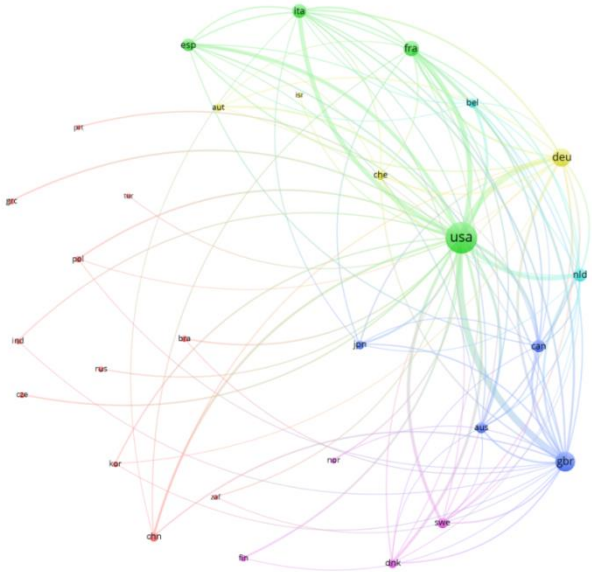
Limits and Future Work

- The classification used provides a good indication of the influence of Gold OA publications.
- However, we would like to split the category **OTHER** publications.
- Some research groups are working on algorithms to code **hybrid papers**.
- Easier proxy for this purpose: use **SHERPA RoMEO** classification of journals based on their OA policies.

open access

European Research Council

Established by the European Commission



Thank you for your attention

Antonio Perianes-Rodríguez
ERC Executive Agency
antonio.perianes-rodriguez@ec.europa.eu
Unit A1 – Support to the Scientific Council

For operational questions please contact
ERC-OPEN-ACCESS@ec.europa.eu

European Commission
Horizon 2020
European Union funding
for Research & Innovation